1540 Jackson Street Residential Development

Draft Environmental Impact Report

Prepared for the City of Oakland

October 1989

EIP Associates

eip

File No. ER 87-11
Ref. No. CMD 87-45

City of Oakland
Oakland, California

DRAFT ENVIRONMENTAL IMPACT REPORT FOR:
1540 Jackson Street
(Project Name)
California Environmental Quality Act (CEQA)

RELEASE OF REPORT FOR PUBLIC REVIEW

The City of Oakland is hereby releasing this draft Environmental Impact Report (EIR), finding it to be accurate and complete and ready for public review. Members of the public are invited to respond to the EIR. Comments should focus on the sufficiency of the EIR in discussing possible impacts on the environment, ways in which adverse effects might be minimized, and alternatives to the project in light of the EIR's purpose to provide useful and accurate information about such factors. Please address all comments to the Oakland City Planning Commission, 6th Floor, City Hall, One City Hall Plaza, Oakland, California, 94612. Comments should be received no later than November 27, 1989.

- [X] The City Planning Commission will conduct a public hearing on the draft EIR on (to be scheduled) in Room 115, City Hall.
- [ ] After all comments are received, a final EIR will be prepared and considered for acceptance by the City Planning Commission on ______ at ______ in Room 115, City Hall.
- [X] The draft EIR is attached.
- [ ] The draft EIR is available at the City Planning Department.

If you have any questions, please telephone the City Planning Department at 273- 3911. Ask for Willie Yee Jr.
Associate Planner

Alvin D. James
ALVIN D. JAMES
Director of City Planning

DATE: October 13, 1989

File No. ER 87-11
Ref. No. CMD 87-45

City of Oakland
Oakland, California

DRAFT ENVIRONMENTAL IMPACT REPORT FOR:
1540 Jackson
(Project name)
California Environmental Quality Act (CEQA)

SUMMARY

A. GENERAL INFORMATION

Project Title 1540 Jackson Street

Location Jackson Street and 17th Street

Project Sponsor TRI Development

Address 550 Fifteenth Street, #34
San Francisco, CA 94103

B. PROJECT DESCRIPTION:

See Section 3, Page 3-1

C. SUMMARY OF ENVIRONMENTAL CONSEQUENCES OF THE PROJECT:

See Section 1, Page 1-1

D. POSSIBLE MITIGATION MEASURES TO MINIMIZE ANY ADVERSE EFFECTS OF THE PROJECT:

Land Use	Energy	Shadows
Traffic and Parking	City Services	
Displacement and Relocation	Air Quality	
Geology and Hydrology	Wind	
Visual Quality	Noise	

E. AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONSULTED:

See Section 8, Page 8-1

F. PUBLIC AGENCIES HAVING JURISDICTION BY LAW OVER THE PROJECT:

City of Oakland

G. PRELIMINARY DRAFT EIR PREPARED BY:

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DATE COMPLETED:

1540 JACKSON STREET RESIDENTIAL DEVELOPMENT

DRAFT ENVIRONMENTAL IMPACT REPORT

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File No. ER 87-11
Reference No. CMD 87-45

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1. SUMMARY

1.1 SETTING

TRI Development Company proposes to construct an 18-story residential building containing 238 condominium units at 1540 Jackson Street in the Lakeside area of Oakland. The project site is on the east side of Jackson Street, mid-block between 15th and 17th Streets (16th Street does not intersect Jackson Street). The Downtown Central Business District is to the west, the Northern Central Business District is to the North, Lake Merritt is to the east, and civic uses are to the south. The Lakeside area is mostly residential, with many apartment buildings and small commercial businesses. There are two office towers and five residential towers of ten stories or more in the area; a sixth highrise residential tower is under construction. Land uses within 200 feet of the project site include three- to five-story apartment buildings.

The site slopes gently from southwest to northeast. The area was formerly part of a tidal flat bordering a marsh system along the margin of San Francisco Bay. The site is probably underlain by a few feet of artificial fill, which is underlain by Merritt sand and San Antonio sand clay and gravel.

The project site is in a seismically active region. The nearest fault zone is the Hayward Fault, located about 3.5 miles to the northeast.

The total floor area of the building would be approximately 320,000 square feet. It would be 192 feet at its highest point. The project would include 110 studio units; 122 one-bedroom units; and six two-bedroom units. There would be a total of 275 parking spaces provided for the proposed project. Recreational facilities, including a pool, would be located on the second floor.

During the period from 1960 to 1980, Oakland experienced a negative population growth; only since 1980 have the population figures begun to rise. Along with the decline in population from 1960 to 1980, there was an increase in number of households, a trend which has continued to the present. The loss in population can be attributed to a decline in household size in Oakland. By 1980, nearly 37% of the City's households contained only one person.

Over the same time period, Oakland has experienced an increase in multi-unit structures while the number of one-unit housing structures has declined. Structures with two or more units have increased by 29% since 1960, now comprising over 50% of the housing stock.

It is estimated that more than 57% of the City's housing supply is renter occupied; in the census tract in which the proposed project lies, 92% of the housing supply is renter-occupied.

1.2 IMPACTS

LAND USE

A 47-unit apartment complex, with a 36-space parking lot on the northern end, would be removed for construction of the proposed project. Construction of the project would strengthen the Lakeside area's identity as a highrise residential area.

The proposed project is in compliance with the site's R-90 zoning and with the goals of the Central Business District Plan and the Oakland Comprehensive Plan.

Displacement and relocation impacts are discussed on page 1-3.

TRAFFIC AND PARKING

The proposed 1540 Jackson Street project would generate 976 vehicle trips per day and 98 vehicle trips in the PM peak hour, for a net generation of 685 daily and 78 PM peak new trips. Access to the project would be via two driveways on Jackson Street. Due to the residential character of the proposed development, the majority of the trips would be traveling to, rather than from, the project site during the PM peak, the opposite direction of the PM peak period flows from the Central Business District.

The proposed project would have negligible impact on local intersections. No levels-of-service would change. A signal is not warranted at the 19th/Jackson Streets intersection.

The proposed project would supply 238 resident parking spaces and 37 visitor spaces for a total of 275 spaces. The number provided represents 37 spaces in excess of the Oakland Planning Code required parking and 44 spaces in excess of estimated parking demand. The removal of the 36 space parking lot (of which 31 spaces are rented to people who live in the area) could potentially impact the on-street parking in the area by 31 spaces or 1.9%.

Project-related impacts on AC Transit and BART would be negligible. The additional pedestrian trips generated by the proposed project would not have a significant impact on pedestrian conditions.

DISPLACEMENT AND RELOCATION

There are currently 47 renter-occupied units on the project site, housing approximately 90 people. The proposed project would remove the existing building and displace all of its tenants, replacing the building with 238 units, for a net gain of 191 housing units within Oakland's overall housing stock. Units within the proposed project would be condominiums, and are expected to be priced between $115,000 and $175,000.

GEOLOGY AND HYDROLOGY

The proposed project would not affect the area's geology, aside from disturbing the underlying sediments for foundation construction.

VISUAL QUALITY

The project would be visually imposing in the neighborhood due to its height in relation to lower surrounding buildings.

Views of Lake Merritt and the Oakland hills to the north and east would be incrementally screened or blocked by the proposed project. Furthermore, the potential for glare exists depending on the type of glazing used.

ENERGY

The Pacific Gas and Electric Company (PG&E) supplies both natural gas and electricity to customers in Oakland. PG&E foresees no difficulty in supplying the project with sufficient natural gas and electricity.

The primary project impact on energy resources would be consumption of non-renewable energy during project construction and operation, as well as project-generated motor vehicle traffic. Annual operational energy consumption of the project would be about 27 billion Btu. Project-related automobile transportation would require about 9.6 billion Btu per year.

The project sponsor is required by law to demonstrate compliance with the California Administrative Code, Title 24, prior to issuance of a building permit. New buildings must also comply with requirements of the Uniform Building Code regarding insulation, glazing, weather sealing, choice of building materials and water and energy conserving plumbing fixtures.

CITY SERVICES

Water supply for the project area is under the jurisdiction of the East Bay Municipal Utilities District (EBMUD), and served by EBMUD's Central Pressure Zone. The project would generate a net increase in water consumption of about 13 million gallons per year. The water supply network serving the project site is capable of handling the additional demand.

Additional base flow of wastewater generated by the project is expected to average 0.039 million gallons per day (mgd), less than 0.05% of the daily flow of EBMUD's Special Sewerage Treatment District No. 1. The peak flow, however, would be about 0.117 mgd. The project could contribute to a capacity problem for the downstream sewer mains as other areas of the basin have flow increases due to new development. The City of Oakland will construct a new by-pass facility to handle increased flows generated by this

and other projects in the vicinity. The project sponsor would be required to pay a mitigation fee to cover the cost to the City of constructing the by-pass facility, proportionate to the project's contribution of increased peak-flow.

It is estimated that the project would generate a net increase of approximately 131 tons of solid waste per year. This is approximately 0.1% of the Oakland Scavenger Company's current daily load.

Electricity is distributed to the project site through Pacific Gas and Electric Company's Substation L. The substation capacity is 90 megawatts; current peak demand within the substation's service area is about 55 megawatts. The proposed project would generate an energy demand of 2,423 megawatts of electricity annually.

The project site is located within the Oakland Police Department's Central District. Currently, one police vehicle and one walking officer patrol the area. An increase in manpower may be required in the area as a result of the project.

The Oakland Fire Department provides the project site with fire protection service. The closest station to the proposed site is Station 12 at 822 Alice Street, which would have a response time to the site of two to three minutes. Engine 1 at 16th and Martin Luther King is also close by. It is anticipated that the Fire Department's level of service would not be affected by the proposed project.

AIR QUALITY

Particulate matter and air pollutants contained in equipment exhaust would be generated during project construction. These emissions could be effectively mitigated by sprinkling exposed earth with water twice a day, covering stockpiles and haul trucks, repaving as soon as possible, and avoiding unnecessary equipment idling.

Hydrocarbons generated by project vehicles would be too small to have an impact on regional ozone levels. Project-related vehicles would not measurably increase local concentrations of CO.

WIND

Wind tunnel tests were conducted for wind on and near the project site with and without the proposed project. Wind tunnel measurements were used to predict equivalent mean wind speed near the proposed project site. These mean wind speeds were compared to comfort criteria, based on the onset of uncomfortable physical effects of the wind, of 11 MPH for pedestrian areas and 7 MPH for sitting areas.

The project was found to generally increase sidewalk area winds. The project had a mixed effect (some locations had increased winds and some had decreased winds) but the number of locations with increased winds exceeded those with decreased winds. The most notable increases occurred on the east side of Jackson Street adjacent to the proposed project. In general, wind increases were moderate, and the measured range of mean windspeeds was similar with and without the proposed project.

Sidewalk areas near the project site were found to exceed an 11 MPH comfort criterion between 0 and 14% of the time with the proposed project. Ground level areas within the proposed project would exceed the 11 MPH comfort criterion between 0 and 10% of the time. The recreation terrace within the project site was found to exceed a 7 MPH comfort criterion by from 2 to 25% of the time, depending on location.

NOISE

Noise would be generated during project construction.

Project-related vehicles would not noticeably increase noise on local streets.

SHADOWS

Shadow impacts of the proposed project were generated for December 21, March 21, and June 21 at 10:00 AM, 12 Noon and 3:00 PM. In general, new shadows would be added to Jackson Street in the morning hours year round. Shadows would cover only part of this street by midday in March and part of the adjacent sidewalk in June. The shadows in the afternoon hours would generally fall within the existing shadows or on the side and back

yards of existing buildings to the east of the project site within the block of the proposed project.

No public open spaces which would be used for recreation purposes would be impacted by shadows from the proposed project during the hours and dates studied. There would be no significant impacts on the availability of sunlight to areas of public access.

1.3 MITIGATION MEASURES

TRAFFIC AND PARKING

Mitigation measures include maintaining existing sidewalks, providing auto gates at least 20 feet back from the sidewalk to maintain an open sidewalk at all times, and providing a protected pedestrianway on Jackson Street during construction.

DISPLACEMENT AND RELOCATION

In order to offset displacement impacts, the project sponsor should provide tenant assistance at least to a level of that required by Oakland's Condominium Conversion Ordinance. The project sponsor's Tenant Assistance Program should be combined with Oakland's standards to minimize relocation impacts.

GEOLOGY AND HYDROLOGY

The existing geological, hydrological and seismic conditions would impose constraints that would require special design considerations. These concerns include dewatering impacts on nearby structures, ground acceleration from earthquakes, and possibly differential uplift.

The mat foundation should be designed to resist soil heave from expanding soils beneath the building.

To protect adjacent streets and buildings from lateral movement or settlement in response to deep excavation, specific recommendations for shoring made in a geotechnical report for the proposed project should be followed.

If construction were to take place during the summer months, dewatering operations in the excavation pit would be diminished, since the water table would be lower and there would be no stormwater runoff entering the pit.

To avoid discharging sediment-laden water from dewatering operation in to Lake Merritt through the City storm drainage system, the water could be detained in sediment basins, where the sediments would be allowed to settle out prior to flowing into the lake.

To ensure the seismic integrity of the proposed project, the building should be designed to accommodate the groundshaking that could occur at the site in the event of a major earthquake along the nearby recently active faults.

VISUAL QUALITY

Mitigation measures included in the project are design features that improve the visual quality, reduce bulk and retain existing landscaping. Setbacks, architectural design and detailing, and landscaping of the project would relieve some of the impacts resulting from the scale of the building.

Recommended mitigation measures include screening rooftop mechanisms from view, utilizing non-reflective materials, providing additional landscaping and pedestrian amenities, and reducing the bulk of the building by stepping it back further.

WIND

For street level winds, the project generally would have little impact, except on sidewalk areas adjacent to the project. These areas would be made more comfortable with the planting of large-sized street trees.

Predicted winds within the outdoor recreation terrace do exceed the comfort criterion for sitting areas a significant percentage of time. The model of the project did not include any landscaping, fences or other features within the terrace that may affect wind velocities. Winds at this level would be less than predicted because of these factors. It is recommended, however, that the layout, perimeter fencing, landscaping and other features included on the terraces should be designed to provide wind shelter from winds in areas where wind-sensitive activities (sitting, eating, etc.) would be located.

NOISE

Noise would be generated during project construction, but this impact could be mitigated by muffling construction equipment with a high noise potential and limiting construction to daylight hours.

2. INTRODUCTION

This report is a focused Environmental Impact Report (EIR) prepared in compliance with the California Environmental Quality Act of 1970 (CEQA). The report has been focused, pursuant to Section 15080 of CEQA, on those items identified as potentially significant in the City of Oakland's Initial Study of the proposed project (Appendix A).

TRI Development Company, the project sponsor, is proposing to construct an 18-story building containing 238 residential condominium units. There would be approximately 350,000 gsf of building area, including three levels of parking (two below ground, one at ground level with a total of 275 spaces) and a pool and other recreational facilities on the second floor. The project site is located at 1540 Jackson Street, two blocks west of Lakeside Drive. This EIR is intended to enable the City of Oakland and local citizens to evaluate the project's effect on the environment, to examine and institute methods of mitigating adverse impacts should the project be approved and to consider alternatives to the proposed project.

3. PROJECT DESCRIPTION

3.1 OBJECTIVES OF THE PROJECT SPONSOR

The project sponsor, TRI Development Company, proposes to build a 238-unit residential condominium structure at 1540 Jackson Street. Because the proposed project would replace a 47-unit apartment complex presently on the site, it would add 191 residential units to Oakland's existing housing stock. The proposed project consists of primarily studio and one-bedroom units (with only six two-bedroom units). Therefore, it is expected that the majority of the residents would be young professionals, either single, or married without children, who would be able to walk from the project to work in downtown Oakland.

3.2 PROJECT SITE

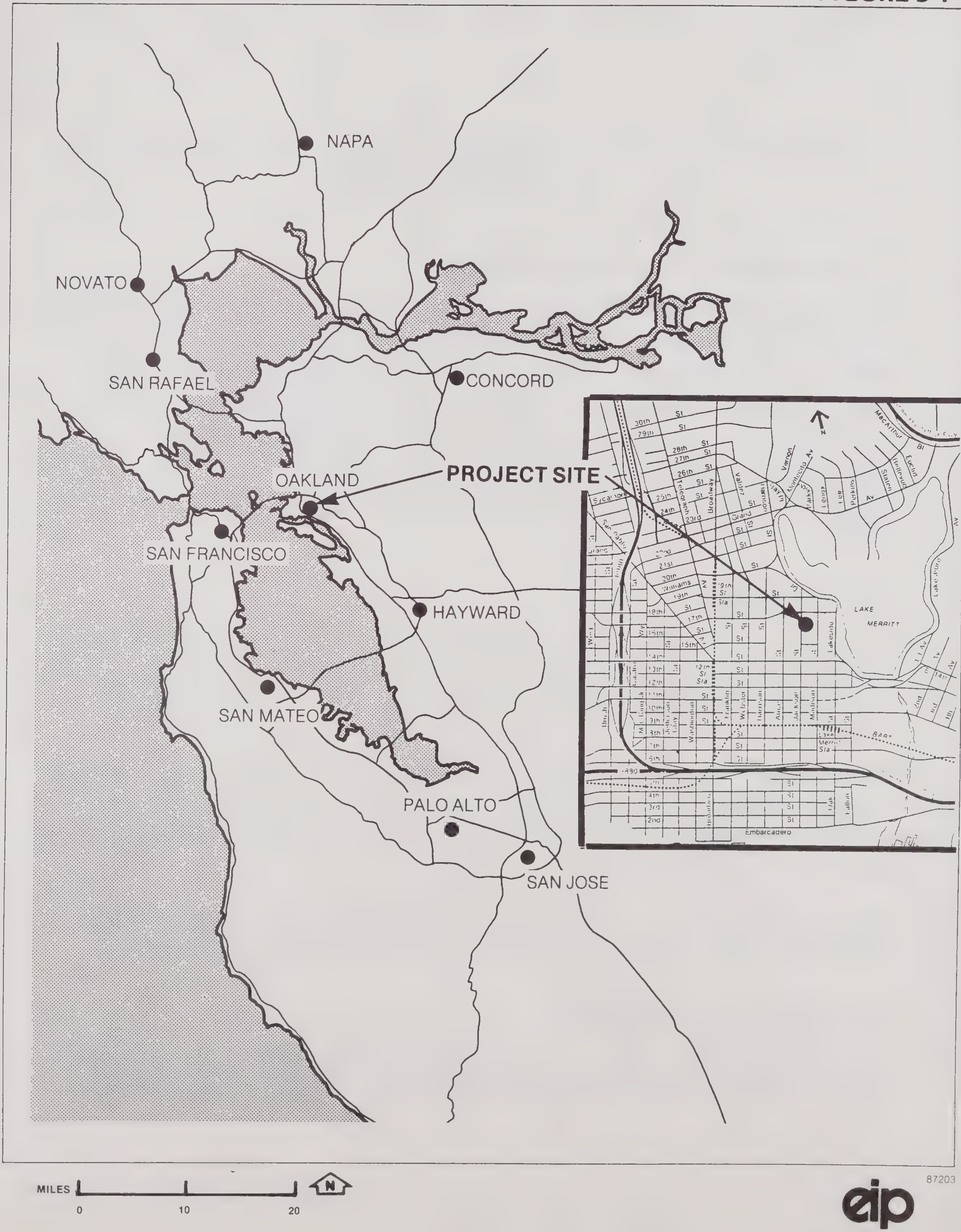
The project site is located at 1540 Jackson Street, in the Lakeside District of Oakland (see Figures 3-1 and 3-2). The 32,700 sq.ft. site is on the east side of Jackson Street, mid-block between 15th and 17th Streets (16th Street does not intersect Jackson Street)

Currently on the site is the Jackson Palms three story apartment complex with 47 residential units and 33 parking spaces. Adjacent to the apartment building and also contained on the site is a 36-space parking lot. Construction of the project would require removal of the existing building and parking lot.

Adjacent to the project site are residential structures ranging in size from about three to five stories in height. Jackson Street is a two-lane, two-way, residential street.

3.3 PROJECT CHARACTERISTICS

The proposed project consists of an 18-story building containing 238 market rate residential condominium units, with 110 studios, 122 one-bedroom units, and six two-


NAPA
NOVATO
SAN RAFAEL
CONCORD
OAKLAND
PROJECT SITE
SAN FRANCISCO
HAYWARD
SAN MATEO
PALO ALTO
SAN JOSE
LAKE MERRITT
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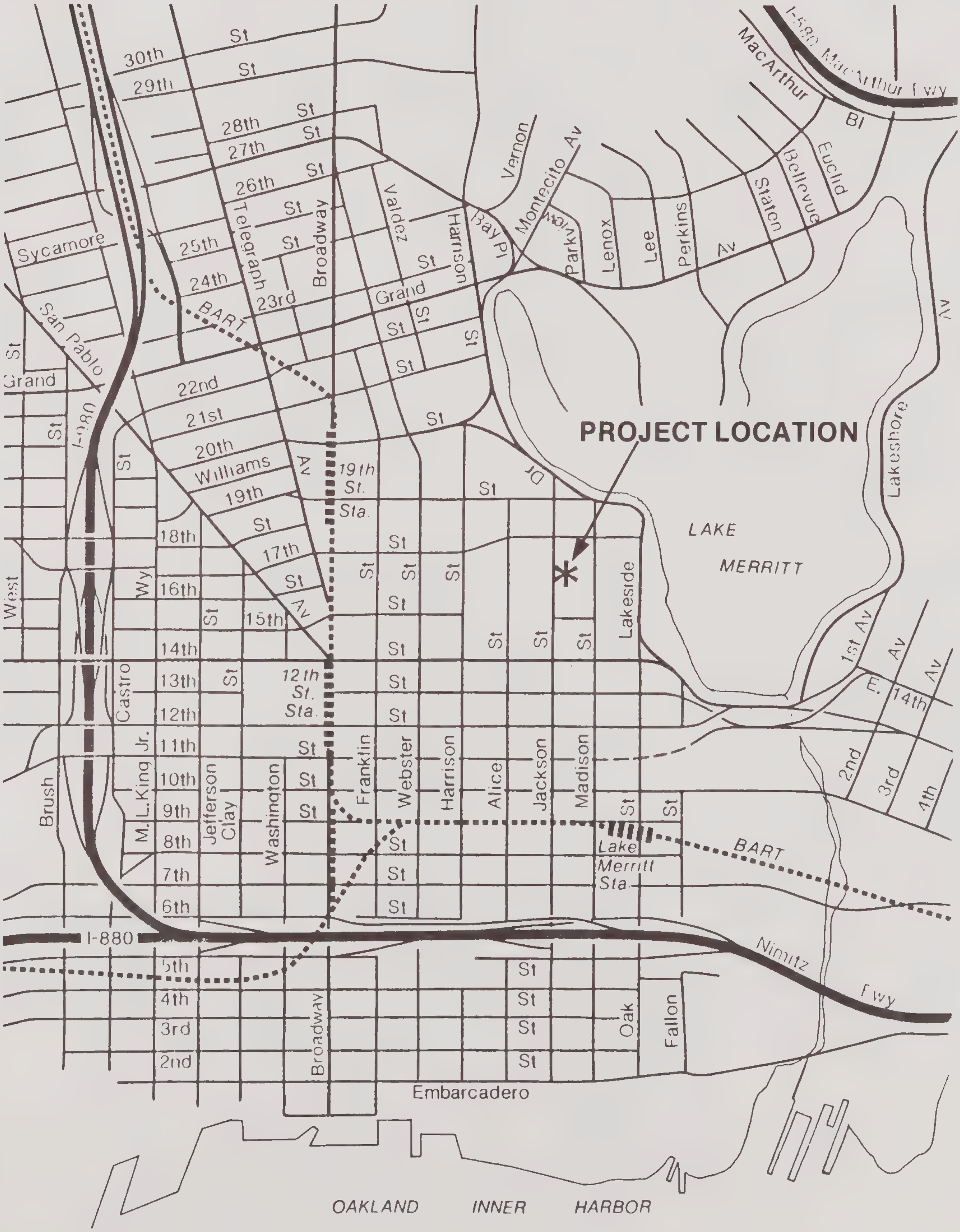
PROJECT VICINITY MAP

FIGURE 3-2



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bedroom units (see Figures 3-3 and 3-4). The total floor area of the project would be approximately 320,000 square feet. The building would be approximately 192 feet at its highest point.

Entrance to the project would be via two driveways off Jackson Street (see Figure 3-5). The building would be set back approximately 40 feet from Jackson Street; the area between the street and the building would contain resident and visitor parking spaces and landscaped area.

The proposed project would include 275 parking spaces. These would be provided on three levels, including two levels below grade and one at the ground floor (see Figures 3-6a and 3-6b). A loading dock, containing two truck berths, would be located at the ground floor level (Figure 3-5). The second floor of the project would contain recreational facilities, including a pool, lounge, weight room, game room, aerobics room, snack room, and two sun rooms (see Figure 3-7).

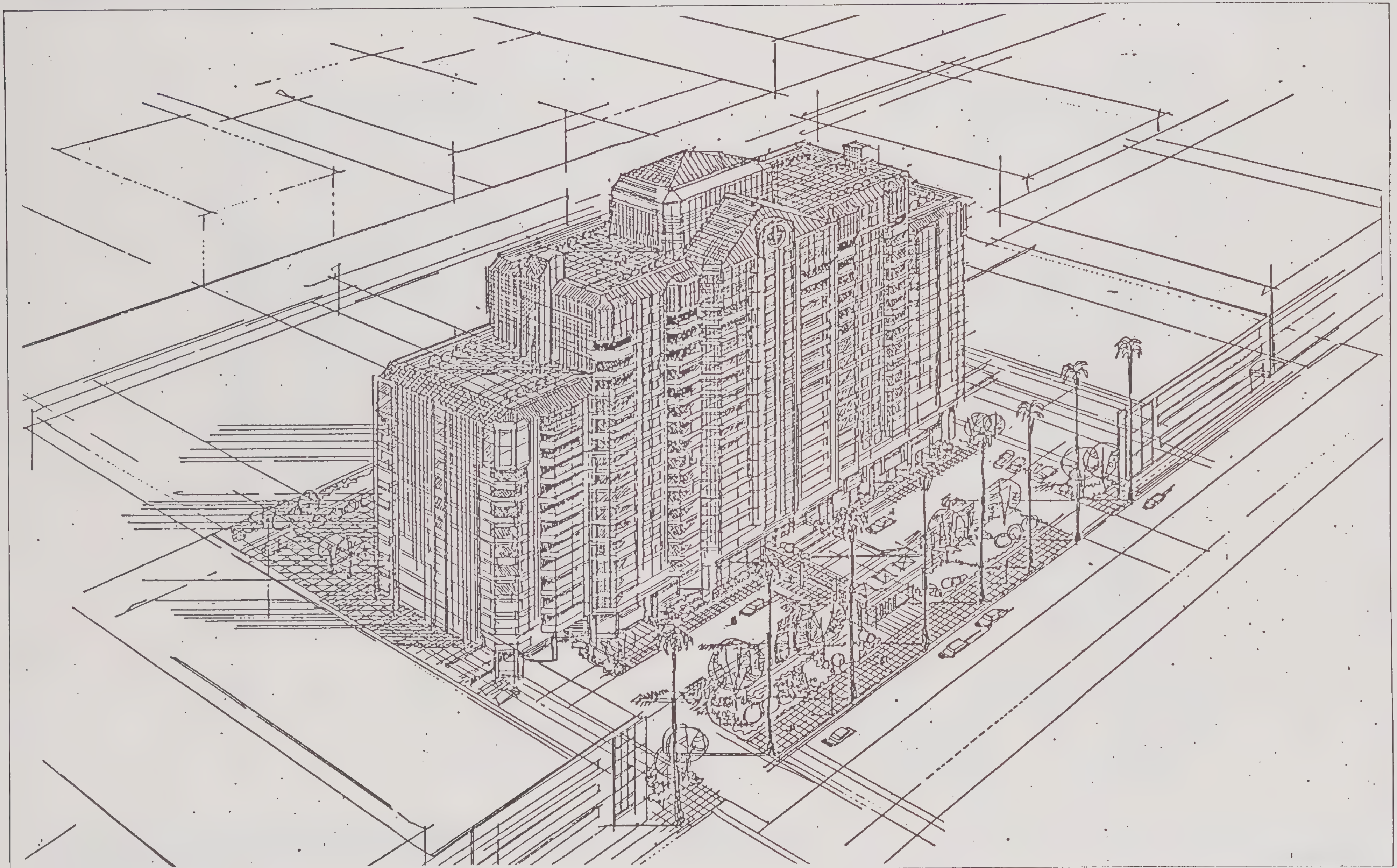
The third through eighteenth floors of the project would contain residential units, with a laundry room on each floor (see Figure 3-8). The gross floor area of the proposed project is shown by floor in Table 3-1. The third through fifteenth floors would contain studios (ranging from 460 to 600 sq.ft.) and one-bedroom units (ranging from 570 to 685 sq.ft.). The sixteenth through eighteenth floors would contain a mixture of studios (510 sq.ft.), one-bedroom units (570 to 800 sq.ft.) and two-bedroom units (1,050 sq.ft.).

3.4 REQUIRED APPROVALS

The project is located in the R-90 Downtown Apartment Zone. Development of the proposed project would require a Major Conditional Use Permit from the City of Oakland, because the project exceeds 100,000 sq.ft. in floor area and 120 ft. in height. Review is also required for projects creating five or more units in high density zones.

PROJECT AXONOMETRIC

FIGURE 3-3



SOURCE: SUE ASSOCIATES

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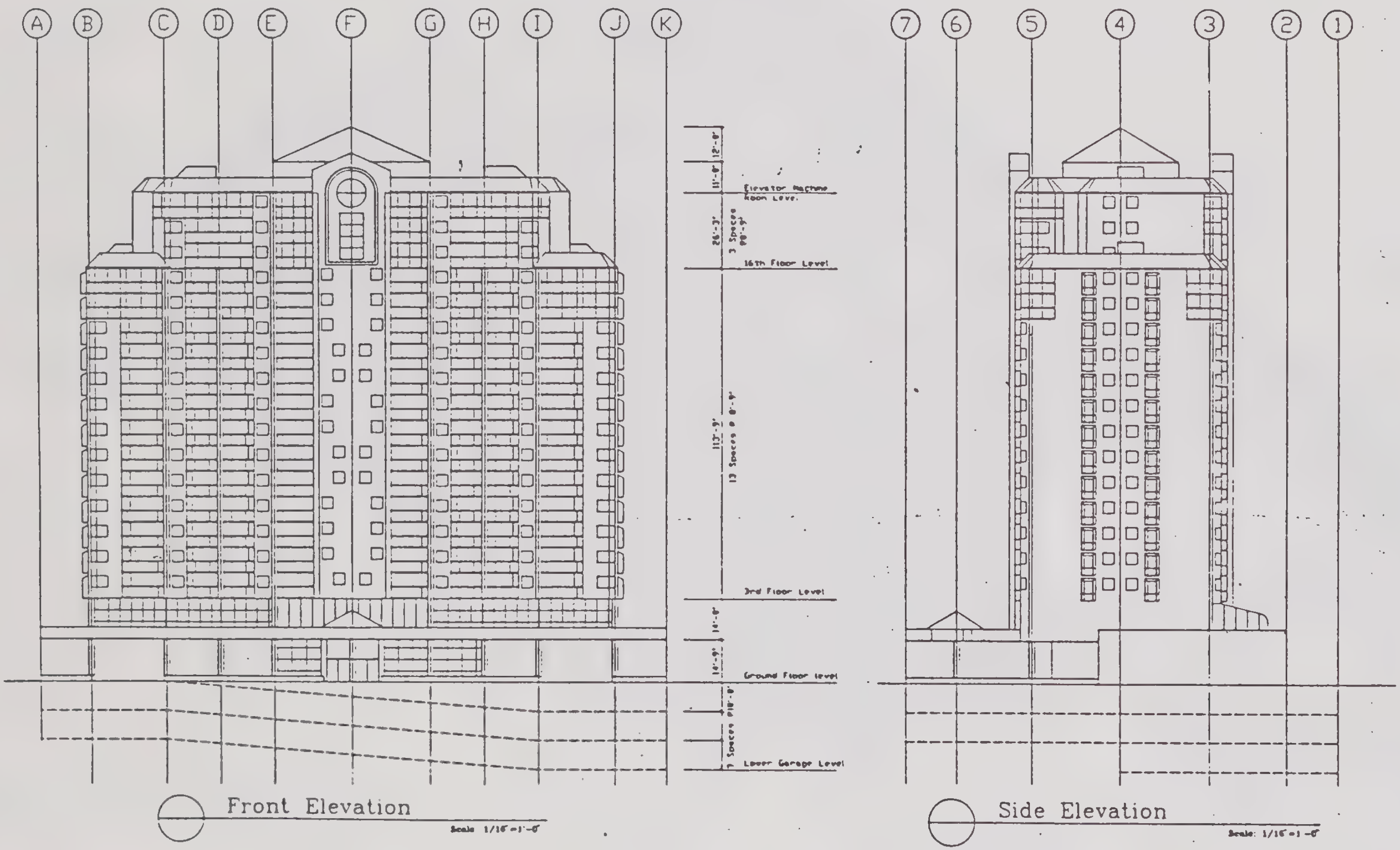
FRONT AND SIDE ELEVATIONS

FIGURE 3-4



SOURCE: SUE ASSOCIATES

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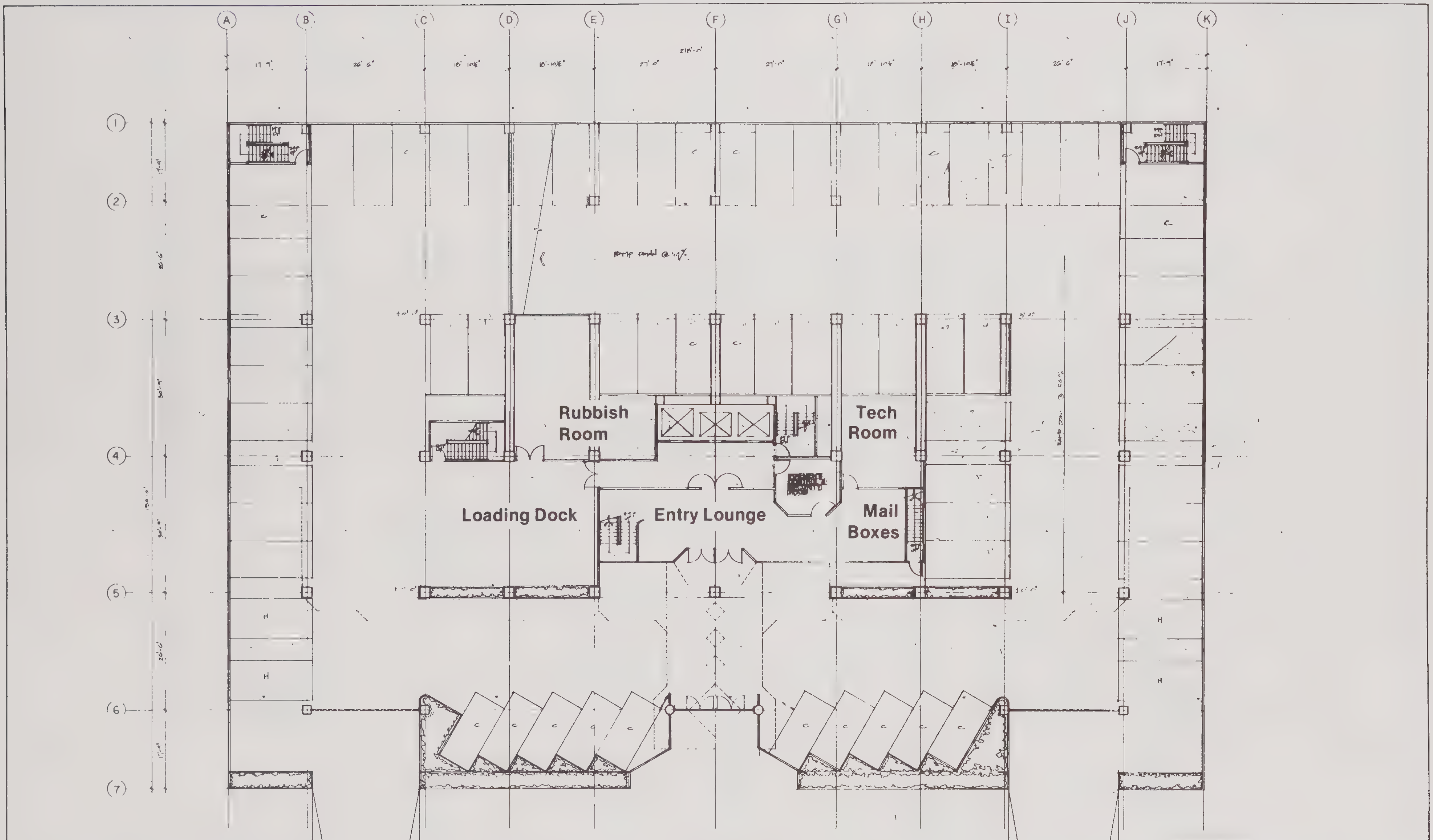
GROUND FLOOR PLAN

FIGURE 3-5



68 Parking Spaces (43 Regular, 21 Compact & 4 Handicapped).

SOURCE: SUE ASSOCIATES

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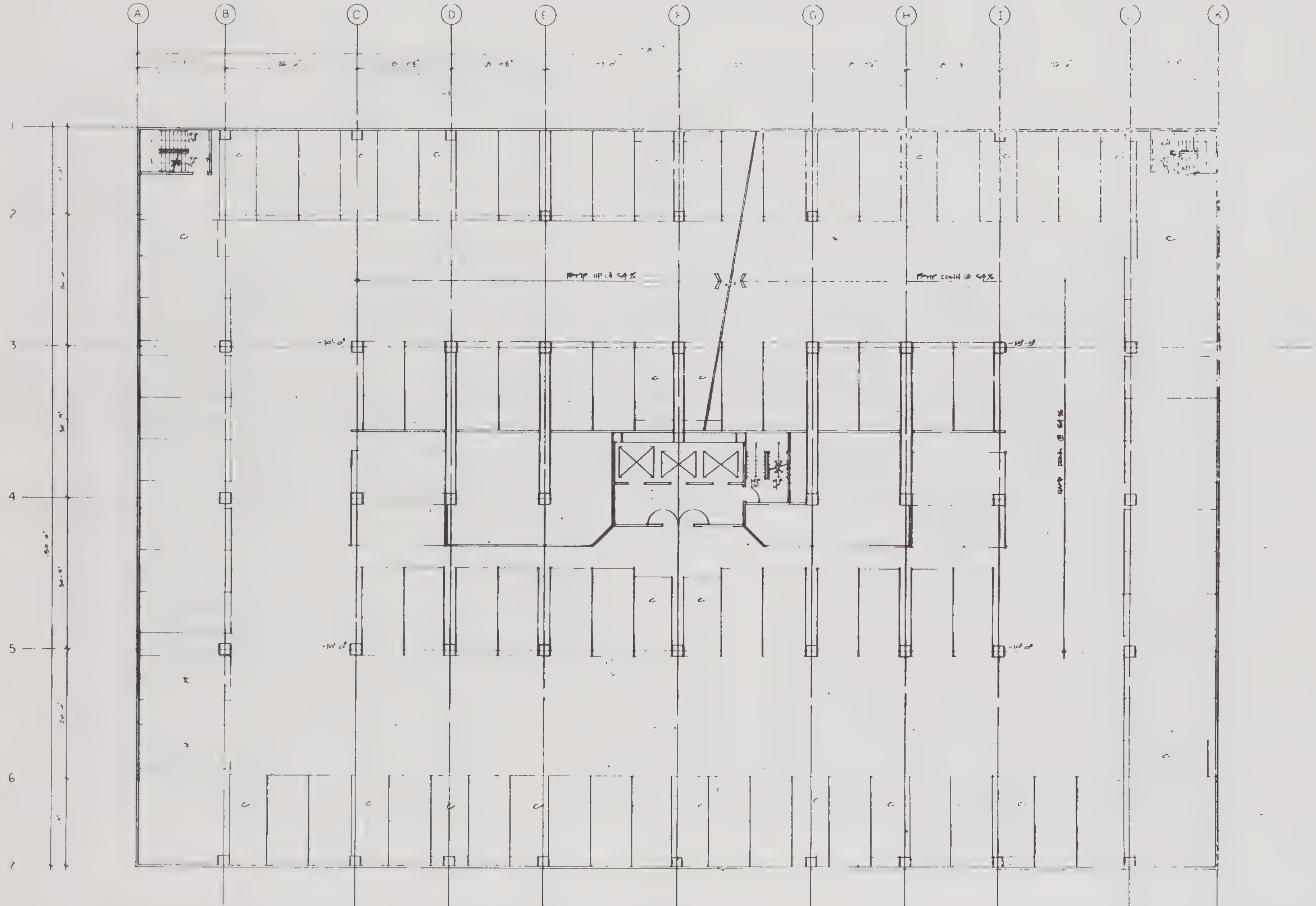
UPPER AND LOWER GARAGE PLAN

FIGURE 3-6a



99 Parking Spaces (74 Regular, 23 Compact & 2 Handicapped).

Note: Lower garage plan contains 9 additional parking spaces, as shown in figure 3-6b.

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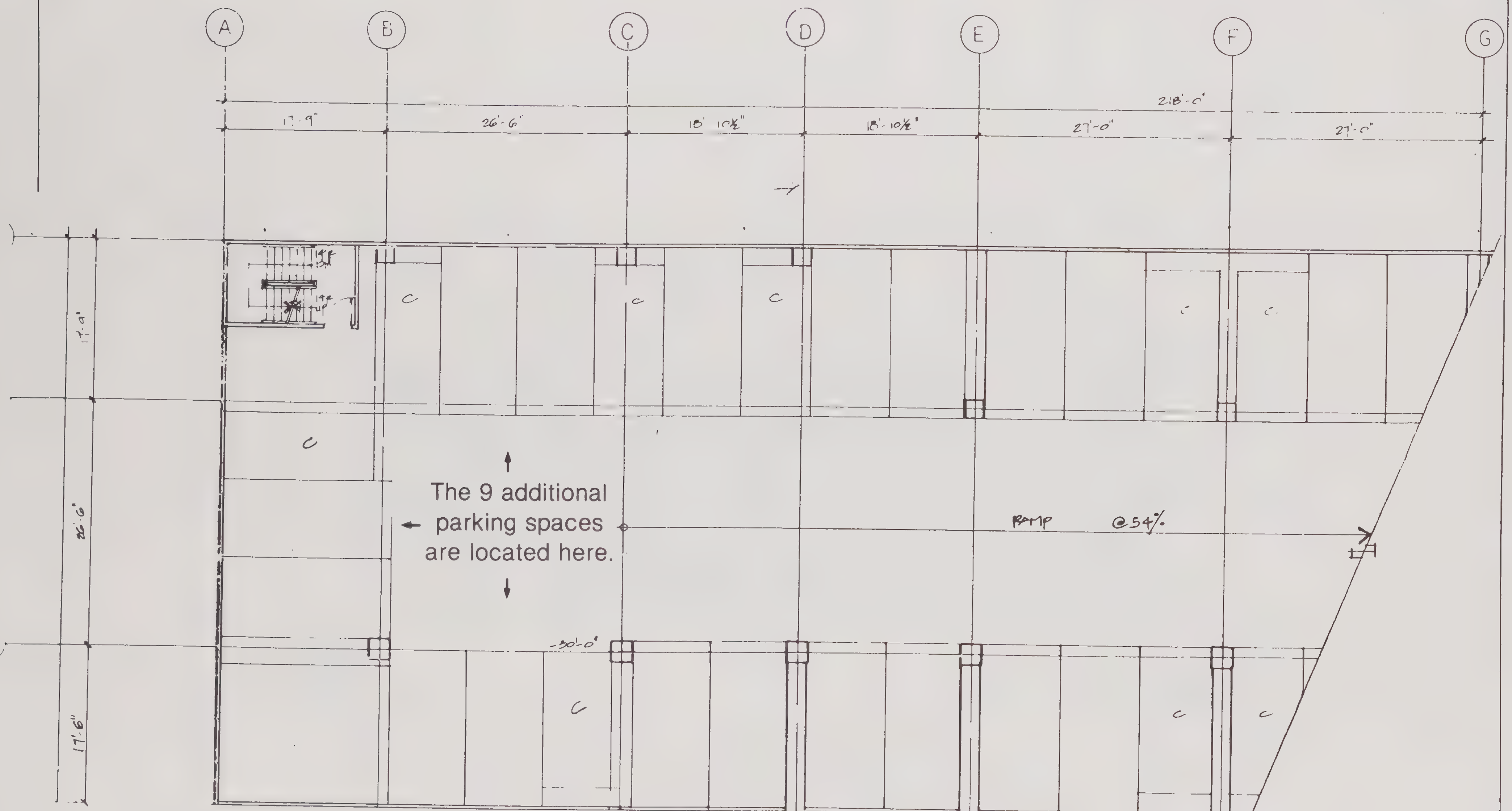
ADDITIONAL PARKING SPACES, LOWER GARAGE PLAN

FIGURE 3-6b



108 Total Parking Spaces
99 Parking Spaces (As Shown in Figure 6-3a) Plus 9 Additional Parking Spaces (6 Regular, 3 Compact)

SOURCE: SUE ASSOCIATES

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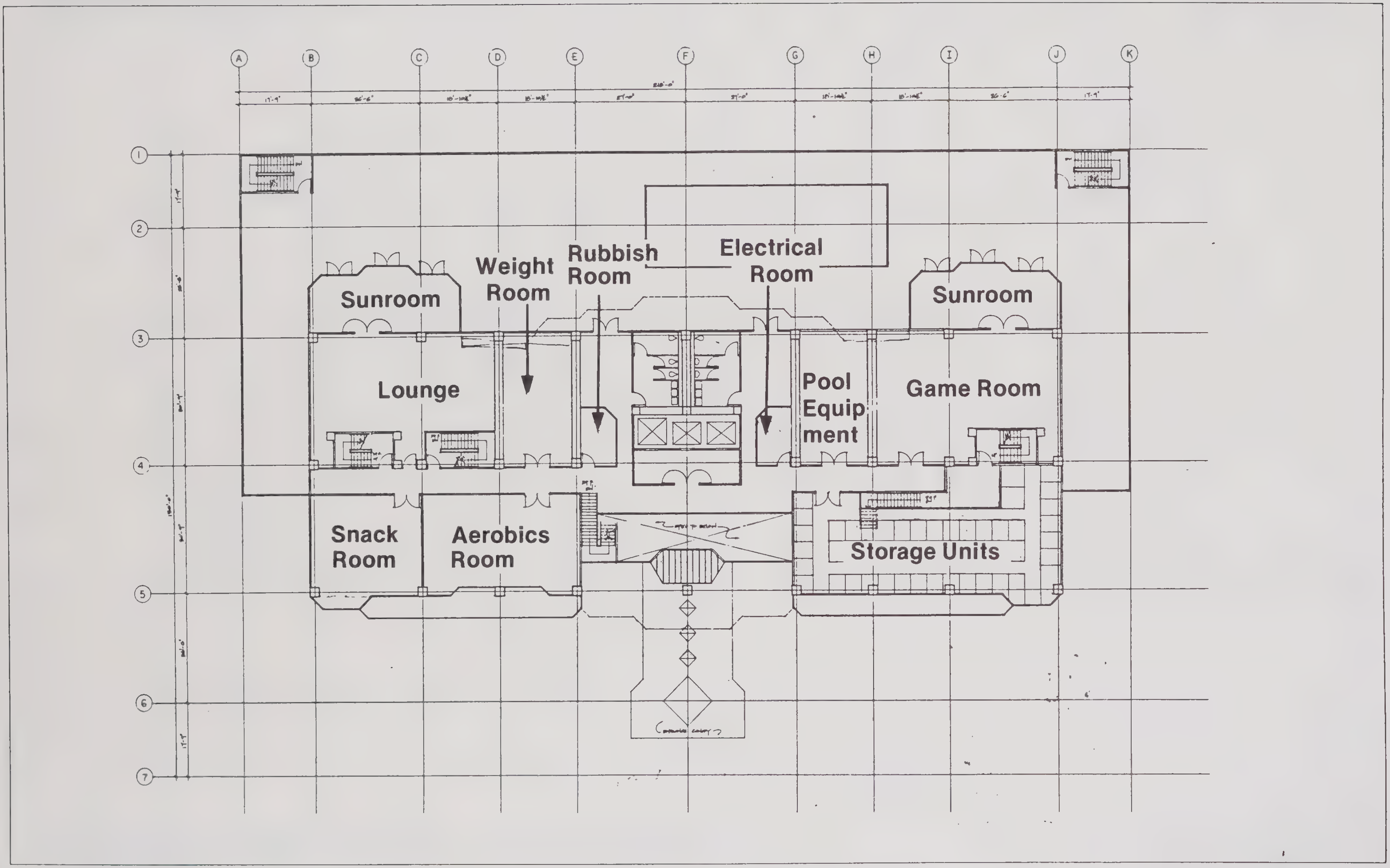
SECOND FLOOR PLAN

FIGURE 3-7



SOURCE: SUE ASSOCIATES

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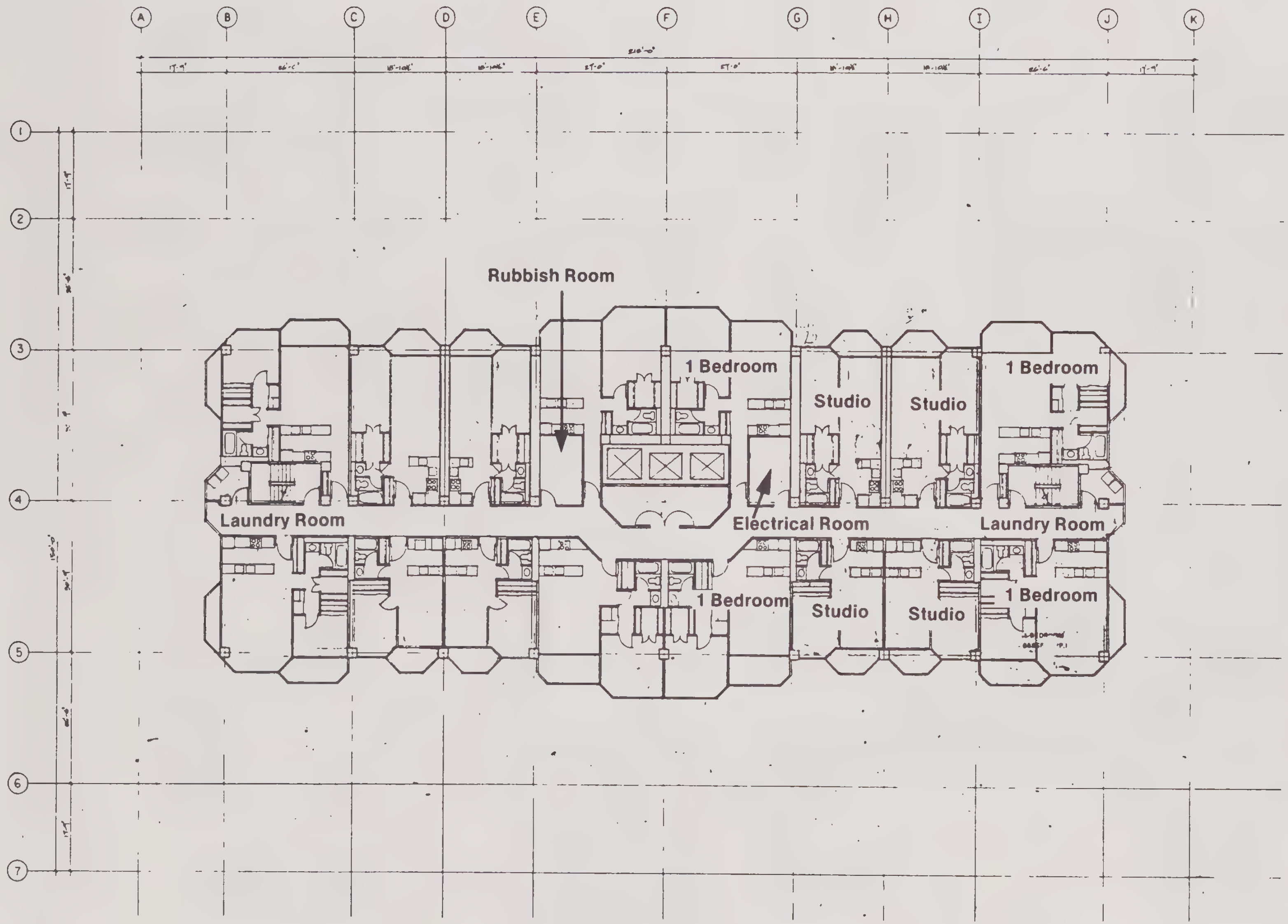
TYPICAL FLOOR PLAN

FIGURE 3-8



SOURCE: SUE ASSOCIATES

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TABLE 3-1

GROSS FLOOR AREA OF THE PROPOSED PROJECT BY FLOOR

Floor	Gross Floor Area
Lower Garage	36,595 sq.ft.
Upper Garage	32,700 sq.ft.
Ground Floor	25,288 sq.ft.
Second Floor	13,470 sq.ft.
3rd - 15th Floor	179,400 sq.ft.
16th - 18th Floor	32,832 sq.ft.
TOTAL	320,285 sq.ft.

4. ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

4.1. LAND USE AND RELATIONSHIP TO PLANS AND POLICIES

(See also Section 4.3 Displacement and Relocation)

4.1.1 SETTING

Land Use in the Project Area

The proposed project site is located within the Lakeside area of Oakland, which is roughly bounded by Lakeside Drive, Harrison Street and 14th Street (see Figures 4.1-1 and 4.1-2).

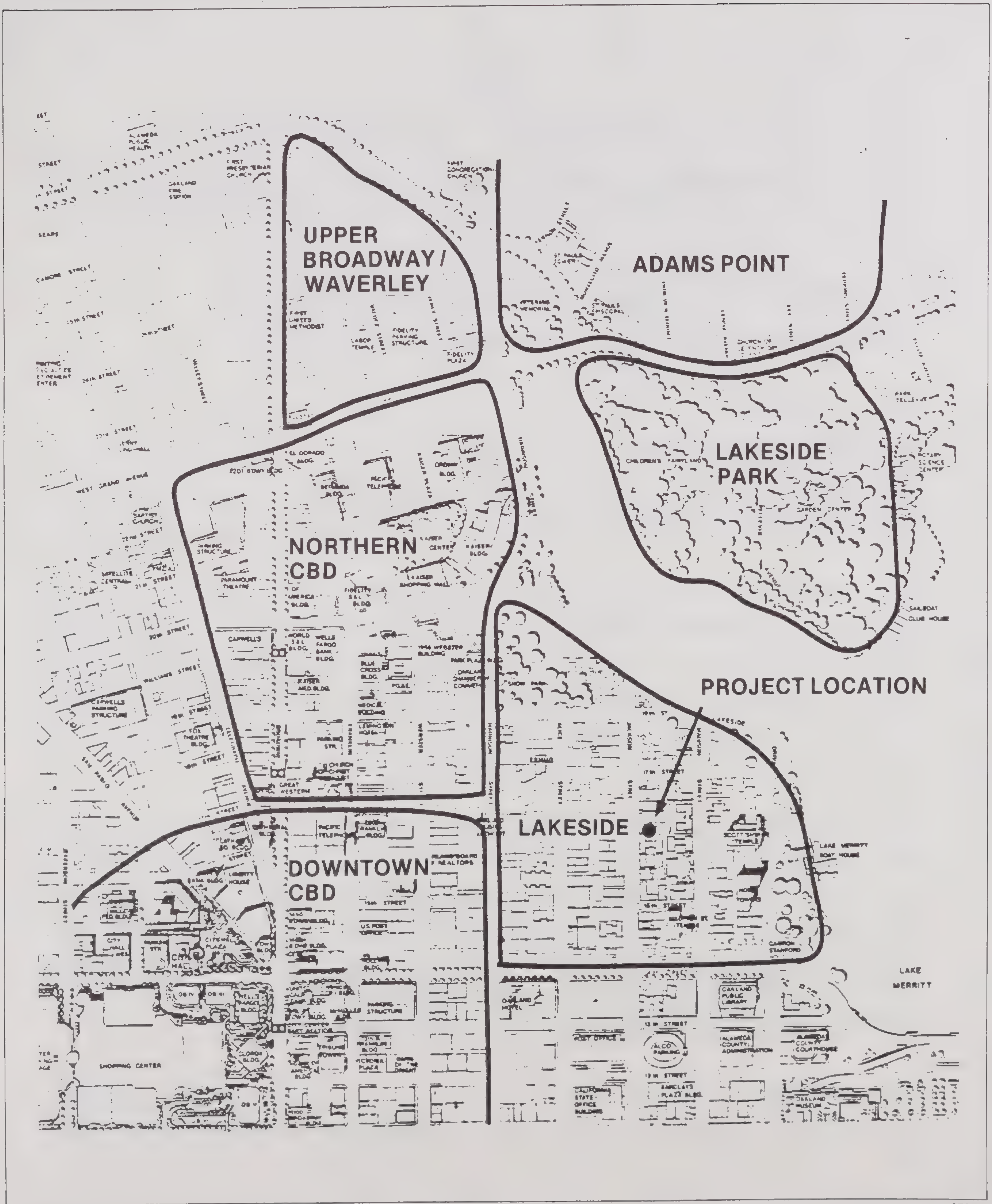
The Lakeside area was once a prestigious area of single-family homes. In the 1920s a trend toward a more dense residential development began; today there are less than five single-family homes in the area. The zoning ordinance adopted in 1935 designated most of this area for multiple dwelling buildings with a height limit of eight stories. However, the westerly portion of blocks between Alice and Jackson Streets, the area west of Alice, and the frontages on 14th Street were zoned for commercial use.[1]

In the 1950s, a heavy increase in apartment construction began, which lasted into the 1960s. Densities increased as buildings became larger and covered more land. Because of its proximity to Downtown Oakland and Lake Merritt, the Lakeside area was seen as an appropriate location for medium- and high-density residential living. Fourteenth Street is a busy east-west transportation route as is Lakeside Drive which follows the contours of the Lake Merritt shoreline. There is a large variety of services within an easy walk of the area and the benefit of walking to work in the Central Business district.

There are currently six examples of existing medium- to high-density residential structures (five at ten stories or more) within the Lakeside area. These include the five-

LAND USE AREAS WEST OF LAKE MERRITT

FIGURE 4.1-1



SOURCE: EIP ASSOCIATES. BASE MAP BY SWA GROUP. USED WITH PERMISSION OF OFFICE OF ECONOMIC DEVELOPMENT, CITY OF OAKLAND

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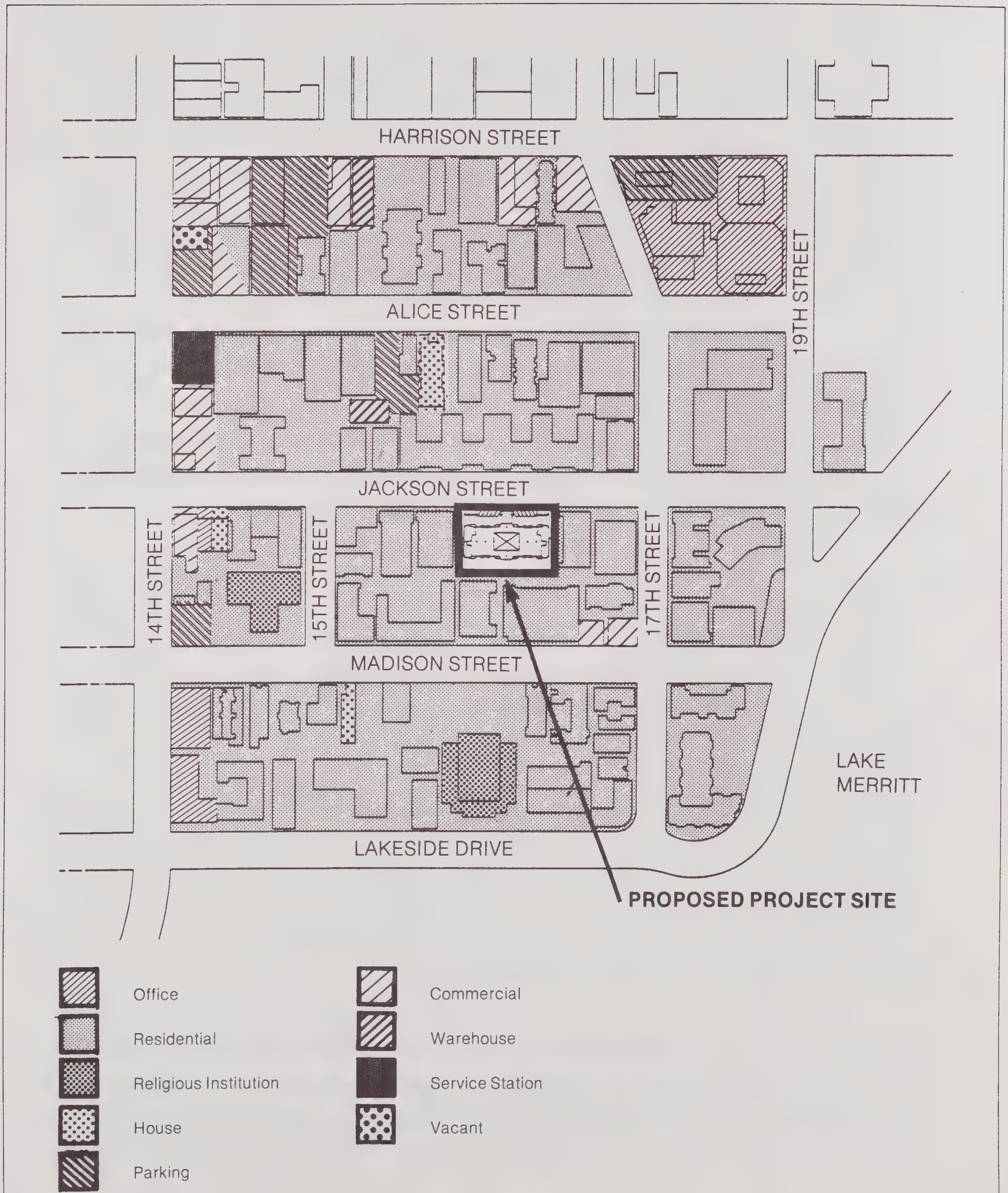
LAND USE IN THE PROJECT AREA

FIGURE 4.1-2



SOURCE: SUE ASSOCIATES

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story, 174-unit Jackson Lake Apartments directly across Jackson from the proposed project site; the 12-story, 55-unit Lake Royal Apartments at 19th and Jackson; the 13-story, 260-unit Lake Park Retirement Residence at 17th and Alice Streets; 1555 Lakeside Drive with 82 condominium units and 13 stories; the 14-story, 195-unit Noble Towers Senior Housing building on Lakeside Drive north of 14th Street; and the ten-story, 160-unit Hill Castle Apartment building located on Jackson Street across from 15th Street. Many of these buildings provide excellent views of Lake Merritt and southern and eastern Oakland. Most contain primarily studios and one and two bedroom apartments.

A sixth residential highrise over ten stories is currently under construction in the area. Lake Point Towers, located on the entire block bounded by 17th Street, Madison Street, and Lakeside Drive, will contain 345,046 gross square feet and will consist of 300 senior housing units and 158 market-rate housing units. The building has two towers, one is 18-stories and fronts 17th Street, and the other is 14-stories and fronts Madison Street. A 308-space parking garage will be built under the residential structures.

Other uses within the Lakeside area consist of two office towers, including a 25-story tower at the corner of Harrison and 19th Streets and an 11-story tower on the corner of 14th Street and Lakeside Drive; two religious institutions (the Scottish Rite Temple on the northern side of Lakeside Drive rising approximately 90 feet, and the Masonic Temple on the corner of 15th Street and Madison Street); and some small commercial businesses fronting Harrison and 14th Streets.

Within 200 feet of the project site, the buildings are primarily three- to five-story apartments. On the west side of Jackson Street and directly across from the proposed project is the Jackson Lake apartment complex containing 174 units in five stories. On the east side of Jackson Street and directly north of the site is the four-story West Lake apartment complex with 34 apartment units. On the south side is the four-story Lakemont apartments containing 53 apartments.

West and north of the Lakeside District are the Downtown Central Business District and the Northern Central Business District respectively. To the east of the proposed project site is Lake Merritt with Lakeside Park on its northern side. Lake Merritt is an important and intensely used recreational resource for Oakland residents. The footpaths bordering

the lake are popular jogging trails and the many small parks at intervals around the Lake are popular for picnicking and sunbathing. Lakeside Park is a regional attraction with landscaped parkland and four special areas: Children's Fairyland, the Garden Center, the Sailboat Club House and the Rotary Science Center.

To the south of the Lakeside area are a variety of civic facilities, including the Alameda County Courthouse and County Administration buildings, the Oakland Public Library, the Oakland Civic Auditorium and the Oakland Museum. Within six blocks of the project site there are three BART stations; the 19th Street Station at 19th Street and Broadway, the Oakland City Center Station at 14th Street and Broadway, and the Lake Merritt Station at Oak Street and 9th Street.

Land Use on the Project Site

The proposed project is located on a 32,700 square foot parcel at 1540 Jackson Street. The proposed project would replace the three-story, 47 unit Jackson Palms apartment building. The Jackson Palms provides 33 underground parking spaces and there is a 36-space surface parking lot on the northern end of the project site. Construction of the proposed project would require the removal of the existing building and parking lot.

General Plan Guidelines and Zoning

Oakland's Central District Plan locates the project site in the Lakeside area. The Plan stresses the importance of the area's convenient location, with access to services and open space and recreation, and promotes the development of a variety of housing types, from three-story to high-rise apartment buildings. The Plan projects a large increase in the residential population of the district, based on the assumption that increased demand will encourage development of vacant lots and lots with older, low-density buildings. However, the Plan stresses that high-rise structures should be spaced so that all parts of the Lakeside neighborhood can enjoy views of Lake Merritt and the East Bay Hills. To preserve the residential neighborhood character, heavy traffic should be routed around rather than through the area.[2]

Zoning for the entire area is R-90, Downtown Apartment Residential. This provides for high-density residential development. There is no height limit, but a floor-area ratio

(FAR) of 7.0. (Note: Areas used for off-street parking spaces, loading berths, driveways, and related maneuvering aisles are excluded from the calculation of FAR, as outlined in Oakland Planning Code Section 2116(c)). Small convenience shops are allowed with a conditional use permit if they are conducted entirely within the enclosed portions of residential buildings, and with customer access only through the lobby of said facilities. One off-street parking space is required for each dwelling unit. Design Review is required in the R-90 zone for all projects involving the creation of five or more new living units. The proposed project would be subject to Design Review criteria for high density housing. Concerns expressed in the Design Review Criteria include building footprint, setback, neighborhood scale, sun and view, natural features, floor heights, facade articulation, neighborhood form, balconies, windows, pedestrian entries, landscape plan, landscape elements, and accessories. The City realizes that it is conceivable that the intent of the design review process – compatibility with the neighborhood and livability of the project — can be acheived through an outstanding design which does not meet all of the detailed guidelines or even flatly contradicts one or more of them. The City gives favorable consideration to such extraordinary proposals.[3]

In the Land Use and Urban Design section of the Oakland Policy plan, a number of policies are outlined regarding residential uses. With respect to high-density residential buildings, the plan has several policies:

1. Higher-density residential development should be channeled into locations offering accessibility and amenity, thereby helping to minimize disruptions to the City's existing stable lower-density areas. The higher densities should be near the Central District and in other clusters and corridors related to major transportation routes, open spaces, and creeks and other topographic amenities.

2. Higher-density residential development should be encouraged around shopping centers so that people can walk to shops and so that the market for goods provided by the centers will be increased.

3. With most built-up residential areas, the density of new housing should, in general, not greatly exceed the area's existing density.

4. In determining appropriate housing density for specific areas of the projects, the City will generally give preference for relatively high densities to those situations which, on balance, best meet the following criteria:

    a. the area's character does not depend heavily on an existing homogeneity of building scale and height.

b. a density increase would likely remove relatively few sound or readily habitable housing units, especially lower-cost units.

c. there is a significant shopping area or a major retail establishment within a quarter-mile walk, or a major commercial or civic employment center within a half-mile walk.[4]

The "Land Use Element" of the Comprehensive Plan encourages development of high intensity residential uses within the Lakeside area. Policies encourage high density housing within the Central Business District, particularly in those areas which are close to public transportation and shopping centers.

Housing policies for the City of Oakland are outlined in the Housing Element of the Comprehensive Plan which was adopted in 1979 and amended in 1986. This amendment was in response to California State Law AB2853 which requires city governments to outline a five-year plan detailing goals to meet the demand for new housing. A listing of these goals, policies, and programs can be found on pages 91 to 115 of the Housing Element. Between 1980 to 1985 the City of Oakland desired 2,750 additional dwelling units to be built throughout the city, which included 750 subsidized units for moderate income, and 1,000 subsidized units for low income persons. See Table 4.1-1.

The following policies are relevant to the proposed project.

Policy #2 – The City will keep well informed of imbalances between housing need and housing supply. The City will take appropriate measures to correct imbalances when they occur.

Policy #3 – The City encourages private housing development in Oakland; it will provide assistance to developers regarding the types and location of units to be built and will attempt to expedite the development of desirable projects, where necessary.

Policy #6 – With the backing of sufficient housing subsidies where necessary, the City and its agencies will insist that all new housing units have those qualities and amenities that will continue to make them competitive in the private market.

TABLE 4.1-1

ACTUAL INCREASE IN HOUSING UNITS COMPARED TO CITY GOALS AND TO NEEDS DETERMINED BY ABAG: OAKLAND 1980-85

	Actual # of Units Built	City Goals		ABAG Goals	
		#	Difference	#	Difference
Net Increase in Housing Units	2,405	2,750	(345)	2,727	(322)
Increase in Subsidized Units	1,386	1,750	(364)	1,582	(196)
Moderate Income[1]	122	750	(628)	382	(260)
Low and Very Low Income[2]	1,264	1,000	264	1,200	64

[1] Assumes only those units created by subsidized ownership programs.

[2] Combined, as income sources at this level can not be differentiated.

Source: City of Oakland, "Housing Element of the General Plan," Adopted March 4, 1986, Table 33, page 95.

City Review and Approval Procedures

The components of this proposed project will require the issuance of a Major Conditional Use Permit by the City of Oakland. The R-90 zone stipulates that any project exceeding 100,000 square feet in size or 120 feet in height requires a Major Conditional Use Permit prior to development. The proposed project is located in the R-90 zone and consists of 320,000 square feet of residential development, with a maximum height of 192 feet. A Major Conditional use Permit is also required when the number of living units on-site are being increased by seven units or more. There are 47 units currently on the site and the proposed project (238 units) increases the number of units to 191. Design Review is required for the construction of five or more units in the R-90 zone (Section 3902). This project would be subject to Design Review criteria for high density housing.

4.1.2 IMPACTS

Existing Project Site and Land Use

The proposed project would replace a three-story, 47-unit apartment complex and adjacent 36-space parking lot. The apartment complex currently on this site houses approximately 90 residents. The project would provide a 238-unit apartment consisting primarily of studios and one-bedroom units.

Subterranean parking is proposed. There would be two levels below grade and one at the ground floor. Excavation would be necessary in order to construct this parking area.

Surrounding Land Uses

Replacement of the three-story apartment building with an 18-story building containing 238 units would increase the density of residential land use in the area, and strengthen the Lakeside area's identity as a high-rise residential area. Although the immediate environment around the site (within 200 yards) consists of three to five story apartment complexes, there are eight buildings (six residential and two office) with ten or more stories in the Lakeside area. Increased use of the Lake Merritt recreational area could be expected to result from the construction of the proposed project.

The construction of new housing close to the Central Business District, the Northern Central Business District, County buildings, Lake Merritt Plaza, and the Kaiser Center could accommodate workers wishing to live close to their jobs.

City of Oakland Plans and Policies

The proposed use of the project site for high-rise residential development is in compliance with the R-90 zoning of the site and with the goals of the Central Business District Plan and the Oakland Comprehensive Plan, as described in the setting. The proximity of the site to public transportation complies with the City's goal of promoting the use of public transportation through the location of housing, shopping and employment centers near major transportation routes.

The City of Oakland, in the Housing Element of the General Plan, established a five-year plan (1985 to 1990) to create 4,375 dwelling units, including 2,300 subsidized units for moderate-income families and 1,015 subsidized units for low-income families. This plan

also included 2,450 low income units to be given rehabilitation assistance. Although the proposed project would not provide any moderate and/or low income housing units, it would provide a net gain of 191 units to the Oakland housing stock.

The displacement and relocation impacts of this loss of 47 moderate income units are discussed in Section 4.3 Displacement and Relocation.

The project meets all open space, floor area ratio, parking, and density requirements of the R-90 zone.

The proposed project complies with the existing plans and policies of the City of Oakland. The proposed residential use of the site is in keeping with existing neighborhood uses. The scale of the proposed project, however, is larger than many of the immediately surrounding land uses. A discussion of the development scale and functionality of the site design is contained within the Visual Quality section of this report.

Overall, the proposed project meets Oakland's Design Review Criteria for High Density Housing. The proposed building's footprint on the site is set back about 40 feet from the street, reducing the apparent scale of the building. The existing large palm trees fronting Jackson Street would be retained, and additional landscape elements would be added. However, the proposed building does not conform to the Design Review Criteria regarding neighborhood scale, sun and views. Facade articulation, neighborhood form, and other design features are discussed in Section 4.5, Visual Quality.

Employment Generation

Employment generated by the proposed project would occur primarily during construction. Once completed, long-term employment would be generated by the project for service and maintenance.

4.1.3 MITIGATION MEASURES

No mitigation measures are recommended.

[1] Oakland Planning Commission, Oakland Central District Plan, page 60-61.

[2] Ibid.

[3] City of Oakland, Design Review Criteria for High Density Housing, May, 1982.

[4] City of Oakland, "Oakland Policy Plan; A Component of the Comprehensive Plan," 1977.

4.2 TRAFFIC AND PARKING

4.2.1 SETTING

Regional Access

The project site is served by three major freeways. Figure 3-1 shows the project's location relative to the City and freeway network.

The Nimitz Freeway, I-880, is the major north-south route from Oakland south to San Jose and north to Richmond. Peak hour traffic, which is carried in eight lanes (four in each direction), averages 16,300 vehicles per hour in both directions. Daily traffic averages 180,000 vehicles a day in both directions.[1] Traffic typically flows well through downtown Oakland. During peak periods, however, congestion occurs north of the Bay Bridge interchange and south of Oakland between San Leandro and Union City. The Nimitz Freeway would be accessible from the project via Jackson Street (two-way), via Madison Street (one-way southbound) and Oak Street/Lakeside (one-way-northbound).

The Grove-Shafter Freeway, I-980, is the major east-west freeway connecting downtown Oakland with Central Contra Costa County. I-980 (State Highway 24) was completed in mid-1985 through downtown Oakland. Peak hour traffic on I-980 averages 5,100 vph carried on eight lanes (four in each direction). Daily traffic averages 51,000 vehicles per day in both directions.[1] East of the I-580 interchange, I-980 becomes State Route 24. On SR 24, peak hour traffic more than doubles in volume with congestion occurring at the Caldecott Tunnel and at numerous locations between Orinda and Walnut Creek. There are two connections to I-980 providing efficient access to the project area, the 11th and 12th Street one-way couplet and the 17th and 19th Street one-way couplet.

The MacArthur Freeway, I-580, runs north-south through Oakland connecting to I-880 in the north and I-680 in the south. The MacArthur freeway serves as a major route to southern and eastern Alameda County. Near the project site, I-580 runs east-west. Peak hour traffic near downtown Oakland averages 19,600 vph carried by eight travel lanes (four in each direction). Daily traffic averages 205,000 vehicles a day in both directions.[1] During peak periods, congestion typically occurs between Harrison Street and High Street eastbound, east of the Bay Bridge interchange, and in southern Alameda County. Access to I-580 would be via Lakeside Drive and Harrison Street.

Local Street Network

The City of Oakland designates Harrison, Webster, Lakeside and Madison as arterials in the site vicinity.[2] Arterials are intended to link districts within the City and distribute traffic to and from the freeways. Franklin, 20th, 19th and 17th Streets are designated as collectors by the City of Oakland.

Streets in the project vicinity can be described as follows (see Figure 4.2-1):

East-West Streets

- 19th Street is a one-way, two-lane westbound street forming part of a one-way couplet with 17th Street and providing access to I-980.
- 17th Street is a one-way, two-lane eastbound street forming part of a one-way couplet with 19th Street and providing access from I-980.
- 14th Street is a two-way, four-lane street. It is a main bus route and pedestrian corridor to the City Center area of Downtown Oakland.

North-South Streets

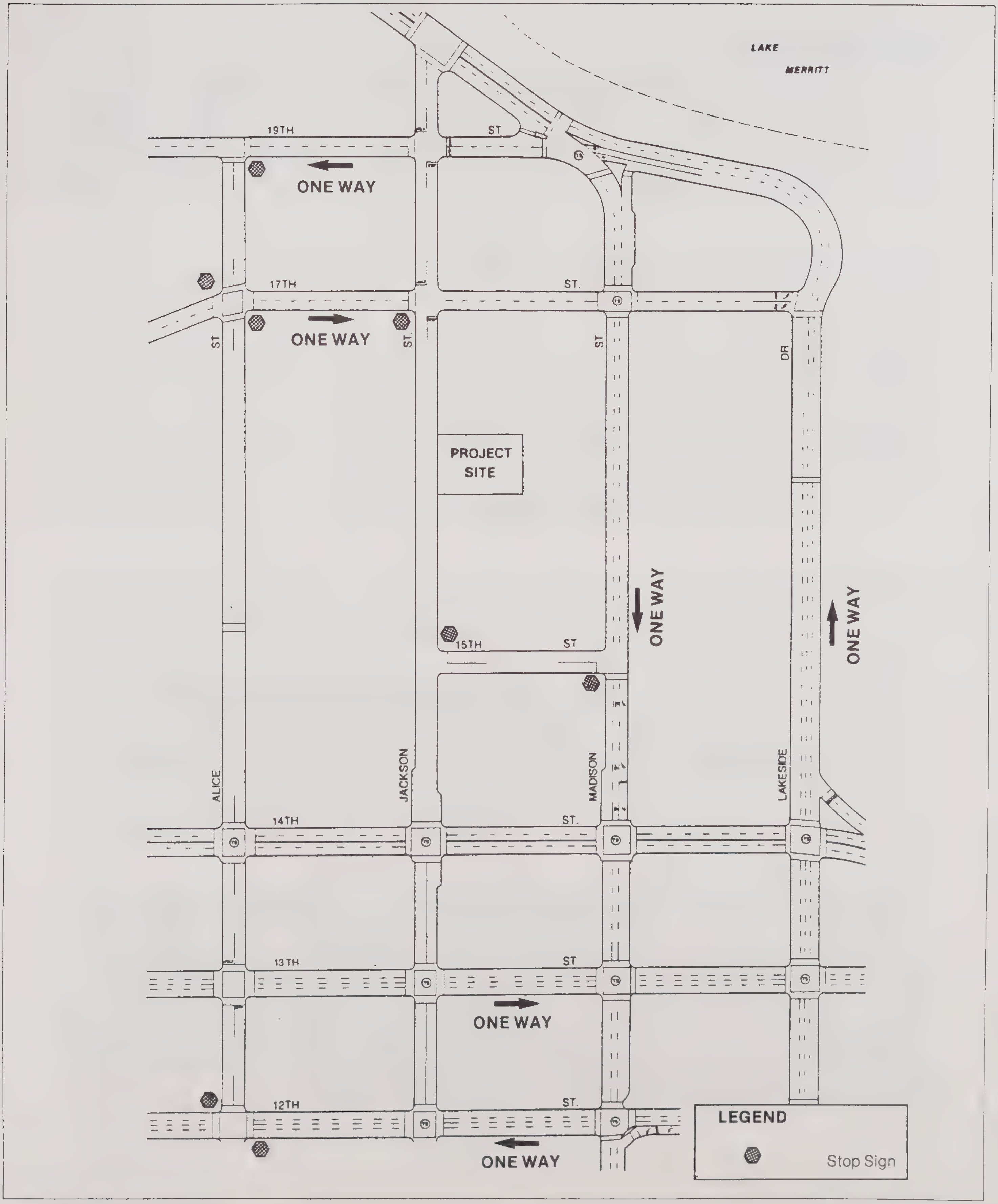
- Jackson Street is a two-way, two-lane residential street on which the proposed project is located.
- Madison Street is a one-way, three-lane southbound arterial street, forming part of a one-way couplet with Oak Street/Lakeside Drive and providing access to I-880.
- Oak Street/Lakeside Drive is a one-way, four-lane northbound arterial forming part of a one-way couplet with Madison Street and providing access from I-880.

Existing Intersection Conditions

All the intersections in the immediate project vicinity with the exception of 19th/Jackson and 17th/Jackson are fixed-time signal controlled intersections. The 19th/Jackson intersection is a three-way stop sign controlled intersection and 17th/Jackson is a two-way stop with stop signs located on Jackson Street. As requested by the City of Oakland, existing intersection conditions were analyzed at six intersections, including Lakeside/Jackson, 19th/Jackson, 17th/Jackson, 14th/Jackson, 14th/Madison and 14th/Oak/Lakeside. All intersections currently operate at acceptable levels of service.

EXISTING ROADWAY GEOMETRICS

FIGURE 4.2-1



SOURCE: THOMSON ENGINEERS

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The existing intersection Levels of Service (LOS) for the intersections are shown in Table 4.2-7 in the Transportation Impacts section.

Parking

Parking Supply

In response to a request by the City, a parking survey was conducted in the project area. The boundaries of the study area were 19th Street and Lakeside Drive on the north, Alice Street on the west, 14th Street on the south, and Lakeside Drive on the east. The study area is shown in Figure 4.2-2. A field survey was made in the study area and all legal on-street parking spaces were counted. An estimate of off-street parking was also made through interviews with building managers in the study area. In many cases, buildings constructed prior to 1950 do not contain parking. The parking survey found a total of 1,608 on-street and off-street parking spaces within the study area. Table 4.2-1 below supplies a breakdown of the parking spaces by category.

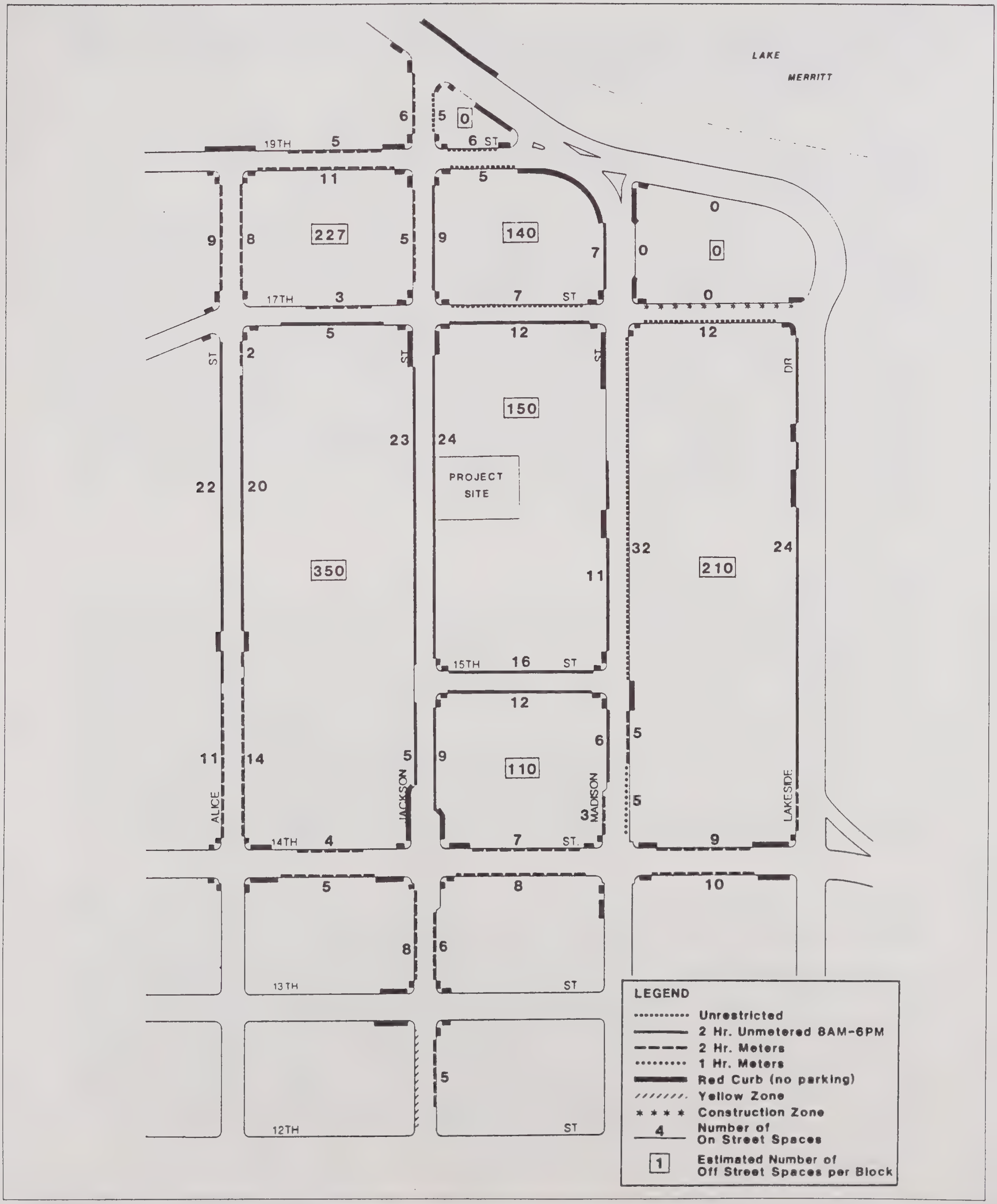
Existing Parking Usage Analysis

A parking occupancy survey was also done to ascertain existing on-street parking use. Parking use surveys were conducted at mid-day for both a weekday and a Saturday. As shown in Figure 4.2-3, the percentage of on-street spaces occupied at mid-day during the week ranged from 40% to 100%. The rate of occupancy on Jackson Street was 80% to 85% in the project block. Field observations indicate that while there may be some parking intrusion caused by employees of Lake Merritt Business District businesses, it is not extensive. Since most of the on-street is two-hour restricted parking between 8 a.m. and 6 p.m., residents who park on the street do have problems during the day.

The parking occupancy rate at mid-day on Saturday was uniformly higher in the residential portion of the study area, and lower in the business related portions of the study area, than during the week. Occupancy rates were 100% in the residential portion of the study area between 17th Street and 14th Street. A parking occupancy rate of 90% or greater is considered saturated. The Saturday parking occupancy rate on Jackson Street adjacent to the proposed project site was 100%. The parking occupancy in the evenings is at capacity, similar to mid-day Saturday.

EXISTING PARKING SUPPLY

FIGURE 4.2-2



SOURCE: THOMSON ENGINEERS PARKING SURVEY, JAN. 1988

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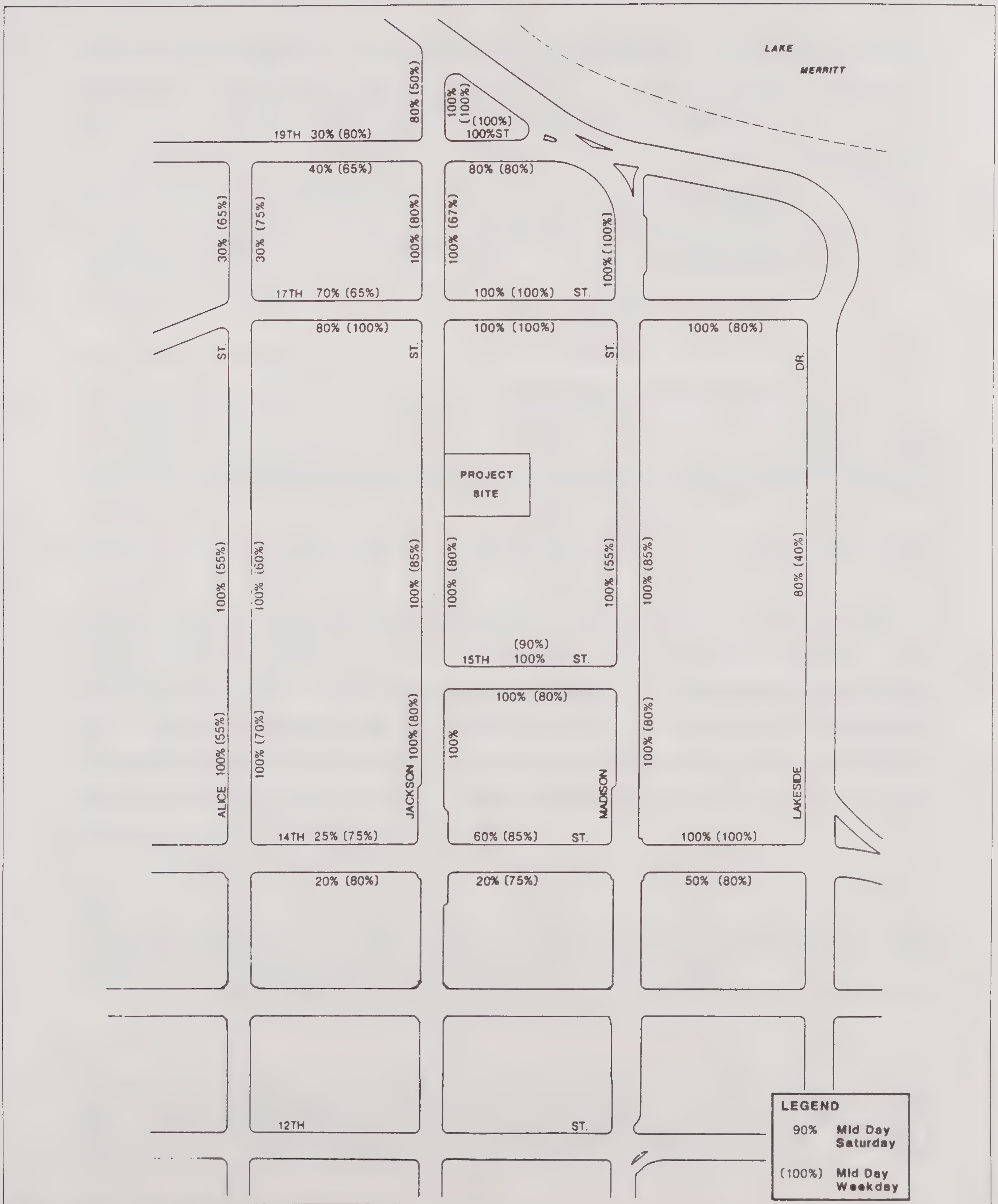
EXISTING ON—STREET PARKING USAGE

FIGURE 4.2-3



SOURCE: THOMSON ENGINEERS PARKING SURVEY, JAN. 1988

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TABLE 4.2-1

PARKING SUPPLY BY CATEGORY IN STUDY AREA

Unrestricted	67
2 Hr. Unmetered 8am - 6pm	210
2 Hr. Meters	139
1 Hr. Meters	5
Subtotal On-Street Parking	421
Estimated Off-Street Parking[1]	1,187
Total On-Street and Off-Street	1,608

[1] Off-street parking supply was estimated. Accurate information was not available for all buildings in the survey area.

The Oakland City Traffic Engineer has received complaints from area residents regarding lack of sufficient on-street parking and intrusion of office workers parking in the area. The City considered a residential parking permit program for the area to eliminate the parking from office employees. In order to implement such a program, a majority of the residents must request the program by petition. Public response did not approach the level necessary to implement the program and it was not carried forward. However, additional research by City staff has recently indicated that sufficient response was received from residents who have no, or insufficient, off-street parking in their building available to them, including residents living on 17th Street and Alice Street. As a result, the City is considering allowing one exception to the residential permit parking ordinance in that a majority response of the residents with no or insufficient off-street parking supply will be adequate for instituting a Residential Permit Parking Program.

Automobile Ownership

Parking demand is a function of automobile ownership and visitor parking. At the request of the City, an existing tenant car ownership and visitor parking demand survey was

conducted (see Appendix B for sample survey and summary). On Saturday, January 23, 250 people in the study area were individually surveyed; the survey sample included both people parking on the street and in private garages. Of those surveyed, 90% were residents of the area. An evening telephone visitor survey was also conducted on Friday night, February 19 and Saturday, February 20. That survey is discussed below. Together, the surveys provided 315 responses regarding auto ownership in the project area. An average ownership rate of 0.99 cars per residential unit was found and the pattern of car ownership was derived as shown in Table 4.2-2.

Visitor Survey

A telephone visitor survey was conducted on the evening of Friday, February 19 and on the evening of Saturday, February 20. A total of 444 homes were contacted in the Jackson Street and Adams Point area. Respondents were asked whether they had guests that evening and if so, how their guests had arrived; by car, by transit, etc. They were also asked how many cars their guests had driven. Based on the number of homes entertaining guests and the number of vehicles their guests drove, compared to the overall number of respondents and homes where there was no answer (and the residents were assumed to be away or not entertaining), rates for the number of guest cars per residential unit were derived. A rate of 0.15 guest cars per residential unit was found in the Adams Point area. A rate of 0.12 guest cars per unit was found in the Jackson Street survey area. The Jackson Street area contained buildings on 17th, 19th, Alice, Madison and Jackson Streets. A combined rate of 0.14 guest cars per unit was found for both areas. Table 4.2-3 below, presents the results of the survey in the Jackson Street area, the Adams Point area and the combined results.

<u>Transit</u>

The project is served by two public transit systems; the Alameda/Contra Costa Transit District (AC Transit) and the Bay Area Rapid Transit District (BART).

AC Transit

There are six AC Transit lines within a four block radius of the project site (see Figure 4.2-4). Headways vary from five to 30 minutes during the morning and evening peak periods. Mid-day service frequencies range from ten to 30 minutes. The lines which

TABLE 4.2-2

CAR OWNERSHIP BY RESIDENTIAL UNIT SIZE

	Ownership Rate
Studio	.77
One Bedroom	.87
Two Bedroom	1.29
Three Bedroom	1.43

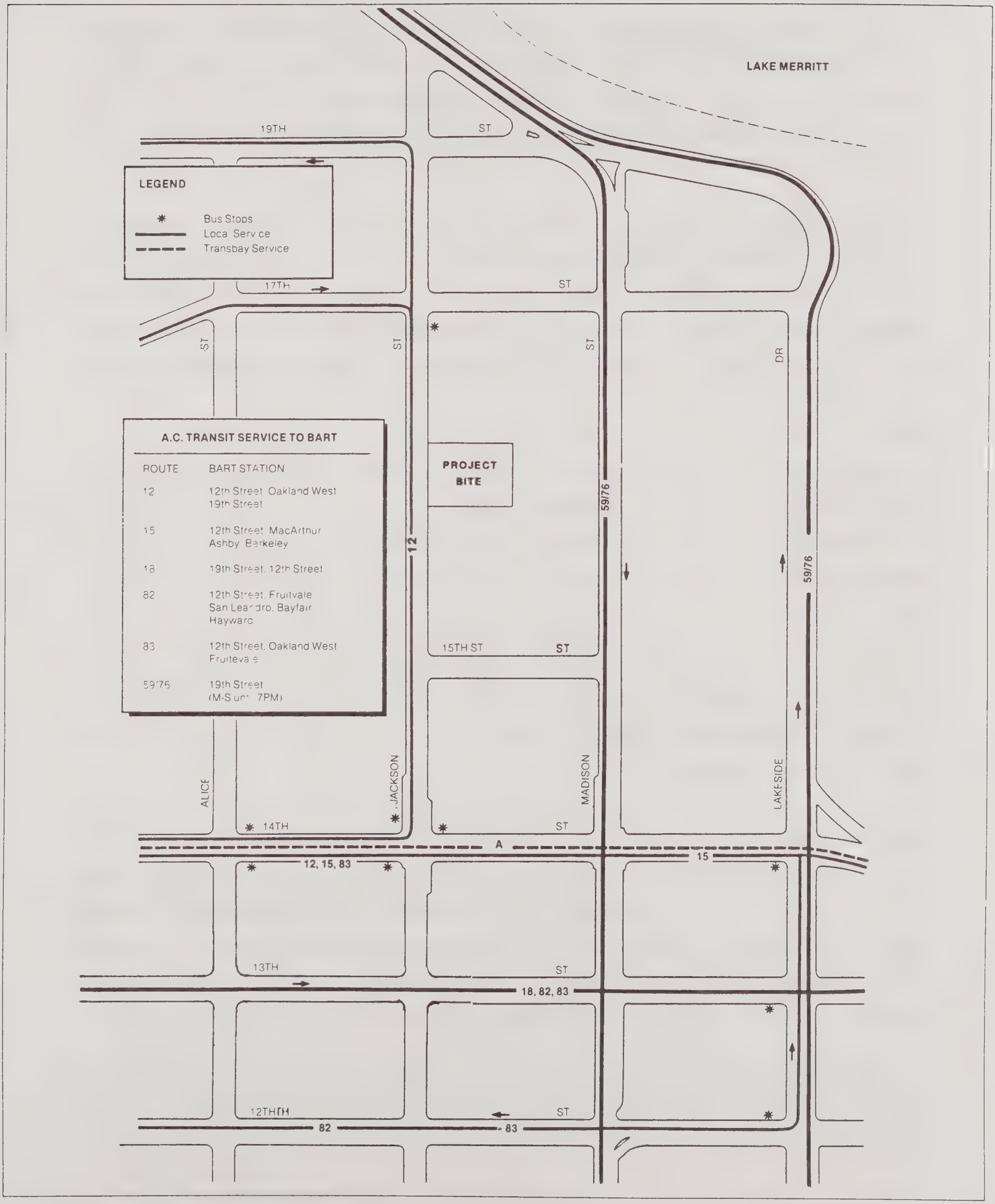
TABLE 4.2-3

GUEST CARS PER RESIDENTIAL UNIT
ON A FRIDAY OR SATURDAY NIGHT

	Answer	No Answer	Total	# of Guest Cars	Guest Cars Per unit
Adams Point	117	115	232	34	0.15
Jackson Street	24	59	83	10	0.12
Total	141	174	315	44	0.14

EXISTING TRANSIT SERVICE

FIGURE 4.2-4



SOURCE: THOMSON ENGINEERS

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provide the most convenient access to the site are Route 12 on Jackson Street and Routes A, 15, 82 and 83 on 14th Street. Route A also provides convenient transbay access to Downtown San Francisco. Route 59/76, which circulates around the Central District, also serves the site, running northbound on Lakeside and southbound on Madison. The downtown shuttle operates on ten to 15 minute headways during weekday business hours.

The PM peak hour load factors on AC Transit routes serving the project site range from 32% to 81% of seated capacity, as shown in Table 4.2-4.[3] The average peak hour load factor for all routes leaving the CBD is 67% of seated capacity. AC Transit has a service objective of keeping peak period load factors to under 1.25 during the peak half-hour period.[4] This criterion is met by all lines in the vicinity of the proposed project.

BART

The closest access to the BART system is provided at the 19th Street Oakland Station, the Oakland City Center Station at 14th Street and Broadway, or at the Lake Merritt Station at Oak Street and 9th Street. All three stations are equidistant (about six blocks) from the proposed project site. BART currently runs four routes through its three downtown stations; Concord-Daly City, Richmond-Daly City, Fremont-Daly City and Richmond-Fremont. Therefore, all stations on the system can be reached without transfer. PM peak hour load factors on these routes range from 0.64 to 1.33, as shown on Table 4.2-5. For planning purposes, BART assumes 1.5 is the average peak hour load factor that will be tolerated by passengers and passengers will balance their ridership among the available lines serving their destination.[5]

Pedestrian/Bicycle Circulation

Lakeside Drive, running parallel to Jackson Street and two blocks to the east, and 14th Street, perpendicular and a long block from the project site, are designated pedestrian ways. The shoreline of Lake Merritt is a designated recreational bikeway. Pedestrian ways and bikeways are intended to provide direct, safe access to parks, recreation areas, mass transit collection points and other places of interest.[6]

Adjacent to the project site, the greatest pedestrian activity occurs at the intersection of Madison and 17th Streets during the PM peak period. Table 4.2-6 presents the current

TABLE 4.2-4

AC TRANSIT PATRONAGE (1981)
Outbound Direction from Oakland CBD, 4:00 - 6:00 PM

	Cordon Station	Routes	Passengers[1]	Seated[1] Capacity	Load[2] Factor
1.	7th/MLK Jr. Way	82, 83	1,354	2,050	0.66
2.	11th & 14th St./MLK Jr. Way	12, 14, 88	475	1,500	0.32
3.	San Pablo & MLK Jr. Way/ W. Grand	15, 72	1,140	1,500	0.76
4.	27th/Telegraph	31, 33, 40, 43	940	1,850	0.51
5.	27th/Broadway	42, 51, 59,76	960	1,650	0.58
6.	Grand/Harrison	11, 12, 18, 34	1,660	2,050	0.81
7.	11th & 14th Street/Oak	14, 15, 18, 38, 40, 43, 82, 83	3,580	4,600	0.78
8.	5th Street/Oak	32, 33, 36	560	950	0.59
9.	6th Street/Webster	42, 51, 58	830	1,000	0.83
	TOTAL		11,499	17,150	0.67

[1]Passengers and capacity are for full two-hour period 4:00 to 6:00 PM.

[2]Load factor equals passengers divided by seated capacity.

Sources: AC Transit Schedule Department
DKS Associates Field Surveys, December 8, 1981

TABLE 4.2-5

BART PATRONAGE
1984 PM Two-Hour Peak Period[1]

Location	Route/Direction	Seats	Passengers	Load Factor
North of MacArthur Station	Daly City to Concord	7,786	10,376	1.33
	Daly City to Richmond	3,785	4,031	1.07
	Fremont to Richmond	2,088	1,339	0.64
South of Lake Merritt Station	Daly City to Fremont	5,198	6,914	1.33
	Richmond to Fremont	2,411	2,706	1.12
West of SF Civic Center Station	All routes to Daly City	14,622	10,733	0.73

[1] PM peak two-hour period data interpolated from BART PM Peak Period train cycle ridership information.

Source: "Representative PM Peak Weekday Load Factors for April-June 1984," BART Planning and Analysis.

TABLE 4.2-6

PEDESTRIAN CROSSWALK VOLUMES
Peak 15-Minute Period

Location	PM Peak 15 Minutes
19th & Madison	
Crossing 19th-West Crosswalk	7
Crossing Madison-South Crosswalk	6
17th & Madison	
Crossing 17th-East Crosswalk	6
Crossing 17th-West Crosswalk	14
Crossing Madison-North Crosswalk	8
Crossing Madison-South Crosswalk	21
17th & Lakeside (Oak)	
Crossing 17th-West Crosswalk	7
Crossing Lakeside-South Crosswalk	8

Source: DKS Associates Field Survey, November 6, 1984 (4-6 PM).

pedestrian volumes in crosswalks near the site. Overall, the pedestrian flows are very light and "free flow" conditions exist at all intersections during peak periods.

4.2.2 IMPACTS

Trip Generation and Distribution

The proposed 1540 Jackson Street project was evaluated based on a completion date of 1991. Access to the project would be via two driveways on Jackson Street. The project as proposed would generate 976 vehicle trips per day and 98 vehicle trips in the PM peak hour. The existing building is estimated to currently produce about 193 daily vehicle trips and 20 PM peak hour vehicle trips. Therefore, the number of new vehicle trips generated by the project would be 685 daily trips and 78 PM peak hour trips. Of the 78 new peak hour vehicle trips, 59 would be entering the project and 19 would be exiting the project.

Due to the residential character of the proposed development, the majority of the trips would be traveling to, rather than away from, the project site during the PM peak period. This pattern is distinctly different from the high outbound PM peak period flows characteristic of commercial and retail areas in the Central Business District (CBD). As shown in Table 4.2-7, 60% of the project's peak hour vehicle trips are from within Oakland, with 20% to and from the CBD and 40% to and from the rest of Oakland. The remaining 40% of the vehicle trips are distributed around the Bay Area.

Traffic Impacts

The City of Oakland selected six intersections in the study area for detailed analysis. The critical movement analysis of the selected intersections was performed for the PM peak hour, 4:30 to 5:30 PM.[7] Table 4.2-8 shows the Levels-of-Service (LOS) and volume-to-capacity ratios (v/c ratio) for the selected intersections for existing conditions and existing conditions plus project traffic (assuming 1991 conditions). See Appendix B for Level-of-Service definitions.

As shown in Table 4.2-8, the proposed project would have negligible impact on any of the local intersections. No Levels-of-Service would change and v/c ratios would alter by not more than 2%. A signal warrant analysis was also conducted at 19th/Jackson; it was found that a signal is not warranted. Though no one intersection would receive a

TABLE 4.2-7

PROJECT TRAFFIC GENERATION

Land Use	Daily Trips	Evening Peak Hour Enter	Evening Peak Hour Exit	Total
Vehicle Trips Per Unit	4.1[1]	0.31	0.10	0.41
Total Vehicle Trips for 238 Units	976	74	24	98
Total Vehicle Trips for the Existing 47 Units	-193	-15	-5	-20
TOTAL NEW TRAFFIC	783	+59	+19	78

Project Mode Split and Distribution

Mode[3]	Trip Distribution[2] Destinations	Vehicle Trips/ PM Peak Hour		Total Person Trips/ PM Peak Hour	
Auto	Oakland CBD	16	(20%)		
	Remainder Oakland	31	(40%)		
	City of Alameda	3	(4%)		
	Contra Costa County	3	(4%)		
	North-East Bay	13	(16%)		
	San Francisco	6	(8%)		
	South Bay Area	6	(8%)		
	Subtotal	78	(100%)	117[4]	(55%)[3]
AC Transit		--	--	38	(18%)
BART		--	--	25	(11.5%)
Other		--	--	33	(15.5%)
	TOTAL	78		213	(100%)

[1] 13th Progress Report on Trip Ends Generation, Caltrans, June 1981.

[2] MTC 550 Zone Journey to Work Table 1980 & MTC FCAST Travel Demand Models, 1977.

[3] Thomson Engineers Survey, January 1988.

[4] Assuming average vehicle occupancy = 1.5 persons/vehicle.

TABLE 4.2-8

INTERSECTION PERFORMANCE
(PM Peak Hour)

	Existing		Existing + Project	
Lakeside/Jackson	0.50	A	0.50	A
19th/Jackson	0.39	A	0.40	A
17th/Jackson	0.43	A	0.45	A
14th/Jackson	0.50	A	0.52	A
14th/Madison	0.47	A	0.47	A
14th/Oak/Lakeside	0.48	A	0.48	A

significant impact from the project, the project would contribute to an increase in automobile activity throughout the general area as a result of more cars in the project vicinity.

During the PM peak hour, about 32 vehicle trips (see Table 4.2-7 above) would be added to Bay Area freeways. This would not significantly alter freeway conditions.

Parking

The project site currently provides 71 off-street parking spaces, 33 in the existing building and 36 in the surface lot adjacent to the building. As part of the project, all existing spaces would be removed.

The City of Oakland's requirement for residential housing is one parking space per unit.[8] The project, therefore, according to City Code is required to provide 238 spaces. Based on a parking demand rate developed from auto ownership and visitor parking surveys, the parking demand is estimated at 231 spaces (198 tenant spaces plus 33 visitor spaces). (See discussion of surveys in parking section of the Setting.) Table 4.2-9 below summarizes the parking demand and the supply for the project.

TABLE 4.2-9

PARKING DEMAND & SUPPLY SUMMARY
1540 Jackson Street

	Units	Code Required Parking	Parking Demand Tenant	Parking Demand Visitor	On-Site Supply Tenant	On-Site Supply Visitor	Parking Surplus or Deficit
Studio Units	116	116	89	--	116	--	--
One Bedroom	116	116	101	--	116	--	--
Two Bedroom	6	6	8		6		
Total	238	238	198	33	238	37	+44

The proposed project would supply one space per unit (238 spaces) and in addition would supply 37 parking spaces reserved for visitors. Hence, the project would provide a total of 275 spaces; 37 spaces in excess of the Code required parking and 44 spaces in excess of estimated Saturday parking demand. Because all parking would be provided on-site, there would be no parking impacts from the proposed project to the area. Out of the 36 spaces, 13 spaces are leased to the building residents and 23 spaces are rented out to commuters.

The project would provide 44 parking spaces in excess of demand. This is more than sufficient to accommodate the 23 spaces of off-street parking supply that would be lost if the new structure were built.

Transit Impacts

AC Transit

Based on existing evening ridership patterns in the CBD, the 1540 Jackson Street project would generate about 38 additional riders on AC Transit during the PM peak hour in downtown Oakland. Due to the residential character of the project, however, only 8%

(three trips) of the AC Transit trips would be outbound from the Central District in the PM peak. The remainder of the transit trips would be in the reverse commute direction. As a result, the impact on AC Transit would be negligible.

BART

The proposed project would generate about 25 PM peak hour BART trips. The majority of these trips would originate in the Westbay and would be inbound to the Oakland Central District during the PM peak hour. The project would have no significant impacts on BART.

Pedestrian Conditions

The proposed project would generate approximately 96 pedestrian trips during the PM peak hour. Most of these trips would be residents of the project returning to the project from transit stops or from work locations nearby. Currently, sidewalks and crosswalks in the project vicinity are free-flowing in the PM peak hour. The additional pedestrian trips generated by the proposed project would not have a significant impact on pedestrian conditions. As part of the project, a minimum unobstructed sidewalk width of five feet would be maintained around the project.

Site Circulation

The project would be served by two driveways, each approximately 25 feet wide. The proposed site plan and circulation scheme is shown on Figure 4.2-5. Visitor parking would be provided in an area separate from tenant parking. Parking spaces would be at 90 degrees, and spaces would be 8.5 feet by 18 feet with 24 foot aisles.

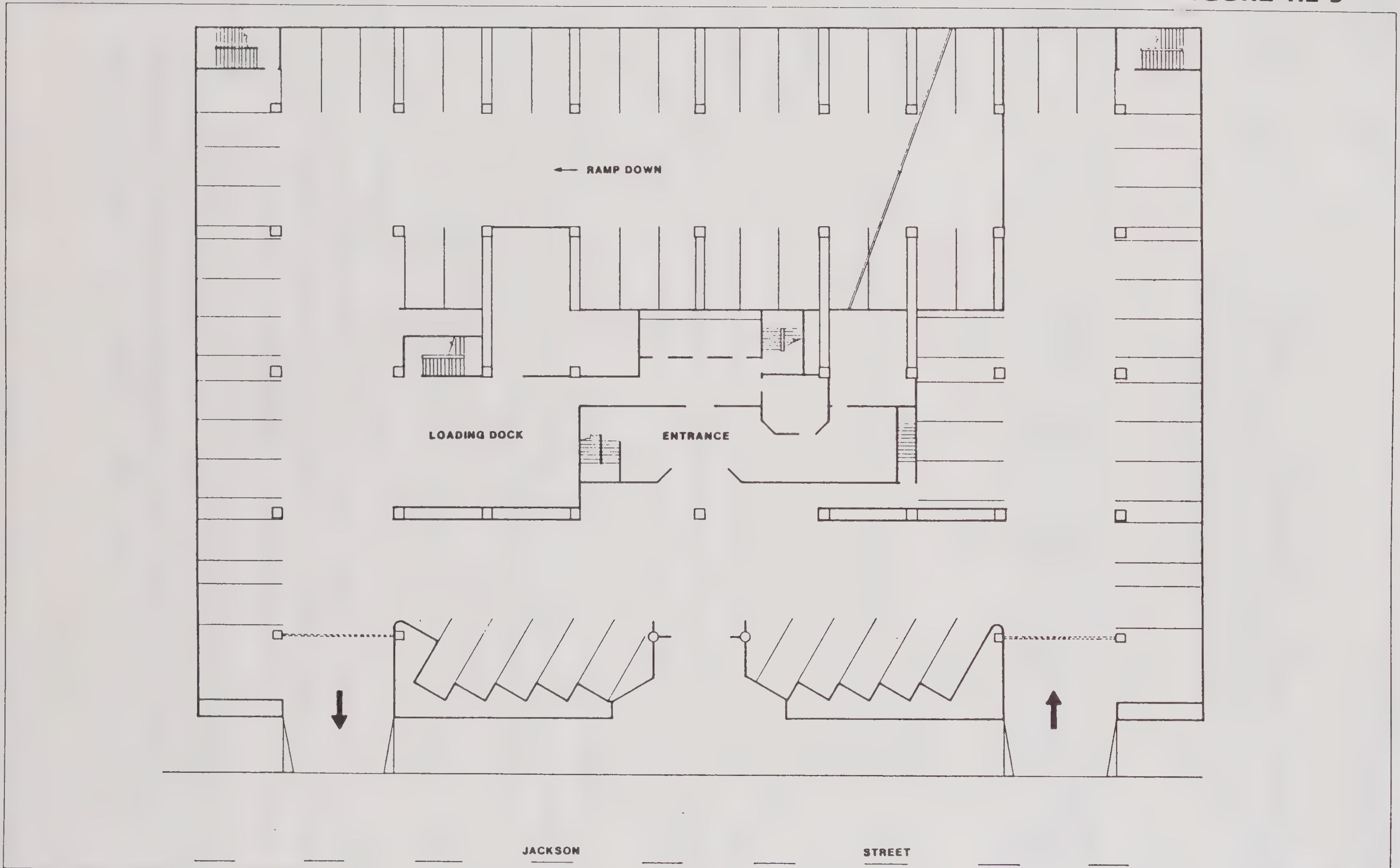
Electrically operated gates at the entrance and exit would control use of the parking area for the use of tenants and visitors only. Electric gates would also separate the visitor parking from the tenant parking. A telephone system would be provided at the entry gate so that visitors may contact tenants who would then operate the gate.

Construction Impacts

The construction of 1540 Jackson Street is expected to take about 18 to 24 months. An estimated 115 construction workers would be employed at the site on any given day.

PROPOSED PROJECT CIRCULATION

FIGURE 4.2-5



SOURCE: THOMSON ENGINEERS

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Based on the experience of the Trans-Pacific Center Phase I construction, it appears that roughly 35% to 50% of all construction workers would drive their cars to work at the Jackson Street project site.[9] This would generate a temporary demand of up to 58 parking spaces. Because the building would take up the entire lot and because there would be excavation for the subsurface garage, it is reasonable to assume the construction contractor would operate the site as a "closed site" and no construction worker parking would be allowed on-site. The workers would share rides or take transit to the job site. Daily vehicle trip generation would be about 12% of the daily vehicle trip generation of the completed building.

Cumulative Impacts

The Lake Point Towers EIR has addressed cumulative impacts in the project vicinity for projects other than this proposed project.

Uncompleted projects in the downtown area include Victorian Row, Kaiser Center, Oakland City Center, Hotel Two, Jack London Square, Chinatown Redevelopment, and Lake Point Towers. The only intersections in the area of this project that would operate at LOS "E" or "F" in 1995 are 27th Street and Harrison, MacArthur Boulevard and Lakeshore Avenue, Grand Avenue and Harrison, Grand Avenue and Webster, 20th Street and Harrison, and 20th Street and Webster. None of these intersections are significantly impacted by this proposed project.

Cumulative parking impacts of projects in the downtown area other than the proposed project will have an excess of 10,611 spaces by 1995. This project would provide a supply in excess of demand and there would be no significant impact.

4.2.3 MITIGATION MEASURES

The following mitigation measures are recommended to be included in the proposed project:

- The parking circulation of the garage should be reversed so that vehicles accessing the garage via the southern driveway would not have to pass through the loading area at the entrance.

- Auto gates should be at least 20 feet back from the sidewalk to maintain an open sidewalk at all times.
- Existing sidewalks should be maintained and should be consistent with existing sidewalk frontage on the project site. A minimum five-foot pedestrian walkway should be provided around the perimeter of the site.
- A protected pedestrian way should be provided on Jackson Street during construction.

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[1] All freeway traffic data was obtained from Caltrans, 1986 Traffic Volumes on the California State Highway System.

[2] City of Oakland, Oakland Policy Plan, amended September, 1980.

[3] Load factor is a ratio of passengers to seats. The load factor data is based on a 1981 Cordon Count of all Central District outbound buses and represents the most comprehensive data available. This data is expected to be updated as part of the Phase II Improvement Study.

[4] AC Transit, Five-Year Plan for FY 1984-1988, May 7, 1983.

[5] BART, 1984 Short Range Transit Plan, June 21, 1984.

[6] City of Oakland, op. cit.

[7] Transportation Research Board, Circular 212.

[8] City of Oakland, Zoning Regulations.

[9] Estimate of construction parking assumes 15% transit use and 1.7 auto occupancy, Lake Point Towers EIR.

4.3 DISPLACEMENT AND RELOCATION

(See also Section 4.1, Land Use)

4.3.1 SETTING

Population and Household Characteristics

Oakland has gained over 18,400 people since the U.S. Census was last taken in 1980, for a 4.6% increase, reversing a trend of negative population growth from 1960 to 1980, when the City's population declined by over 28,000 people (see Table 4.3-1). Population growth since 1985 suggests that Oakland may soon achieve a population level similar to the level documented as part of the 1960 U.S. Census.

Along with the decline in population during the 1960 to 1980 period was a 5.8% increase in the number of households, which has continued to grow since 1980 (see Table 4.3-2), indicating that household size has declined while the number of households increased. "Household" is defined by the U.S. Census as the person or persons living in a dwelling unit. The data presented in Table C-1 in Appendix C show that average household size declined from 2.53 in 1970 to 2.33 in 1980, rose slightly in 1985, and is projected to decline to 2.21 by the end of the century. Of particular note is the rapid decline in the number of large households, which experienced a decrease of nearly 3,000 households from 1970 to 1980.

As the number of large households has declined, the number of one-person households has increased during the 1970 to 1980 period at a rate nine times that of overall household growth (see Table C-2 in Appendix C). In 1980 nearly 37% of the City's households were one-person households; this increase is expected to continue for the foreseeable future, possibly resulting in the need to develop housing tailored to these households.

Housing Characteristics

The number of dwelling units in the City increased steadily from 1960 to 1988, at the rate of 9.2% over the 28-year period (see Table 4.3-3). This level of growth included a 2.9% increase since 1980, demonstrating that Oakland remains a desirable locale for housing investment.

TABLE 4.3-1

OAKLAND POPULATION GROWTH
1960-1988

Year	Population	Change in Population	Annual Average % Change
1960	367,548	--	--
1970	361,561	-5,987	-.16%
1980	339,337	-22,224	-.61
1985	354,954	15,617	.92
1988	357,800	2,846	.27

Sources: U.S. Bureau of the Census, Census of Population and Housing, 1960, 1970 and 1980.
State of California Department of Finance (DOF), Population Research Unit, Controlled County Population Estimates for 1-1-85 (Alameda County), and Controlled County Population Estimates for 1-1-88.
Supplemental calculations by EIP Associates.

TABLE 4.3-2

OAKLAND HOUSEHOLD GROWTH
1960-1988

Year	Households[1]	Change in Households	Annual Average % Change
1960	133,843	--	--
1970	138,831	4,988	.37%
1980	141,657	2,826	.20
1985	145,601	3,944	.28
1988	147,574	1,973	.45

[1]Defined as the person or persons occupying a housing unit.

Sources: U.S. Bureau of the Census, 1960, 1970 and 1980.
State of California DOF; 1985, 1988.
Supplemental calculations by EIP Associates.

TABLE 4.3-3

OAKLAND HOUSING STOCK GROWTH
1960-1988

Year	No. of Dwelling Units	Annual Average % Change
1960	141,537	--
1970	146,615	.36%
1980	150,274	.25
1985	153,150	.38
1988	154,571	.31

Sources: U.S. Bureau of the Census, 1960, 1970 and 1980.
State of California DOF, 1985, 1988.
Supplemental calculations by EIP Associates.

TABLE 4.3-4

OAKLAND HOUSING VACANCY CHARACTERISTICS
1960-1988

Year	Occupied Units	Vacant Units	% Vacant
1960	133,843	7,694	5.4%
1970	138,831	7,784	5.3
1980	141,657	8,617	5.7
1985	145,601	7,549	4.9
1988	147,574	6,997	4.5

Sources: U.S. Bureau of the Census, 1960, 1970 and 1980.
State of California DOF, 1985, 1988.

U.S. Census data on housing vacancy in Oakland show that the City's overall vacancy rate remained at roughly 5% during the 1960 to 1980 period (see Table 4.3-4). Data for 1985 from both the California Department of Finance and the Federal Home Loan Bank show that the overall rate dropped to between 1.7-4.9%, suggesting that the demand for housing in the City is now greater than at any time in the past 25 years. However, vacancy rates in Oakland are still relatively higher than nearby cities, as they have been throughout the 1960 to 1988 period.

The relationship between one-unit housing structures and multi-unit housing structures has changed substantially since 1960, when more than one-half of the City's housing stock was in one-unit structures (see Table C-3 in Appendix C). As Table C-4 in Appendix C shows, there has been an actual decline in the number of such units, while structures with two or more units have increased by 29% since 1960, and now constitute roughly 51% of the City's housing supply. During the period from 1982 to 1984, the majority of the new multi-unit housing was built in the Lake Merritt area and the Central District.[1]

The data in Table C-4 in Appendix C show that the number of one-unit housing structures has increased by 1.7% since 1980, reversing a two-decade trend of decline in the number of units. Substantial conversion of older single-unit structures to multi-unit housing, as well as demolition of similar units to facilitate more intensive development, may have contributed to the decline in the number of one-unit structures.

The age of the City's housing stock is substantially older than the rest of Alameda County, as nearly 77% of the City's housing was built before 1960, while only 52% of the rest of the County's housing was built before that time (see Table C-5 in Appendix C). Continued renovation and addition of multi-unit housing on lots with older one-unit structures can be expected as the pressure for new housing increases.

Housing tenure composition in Oakland changed between 1960 and 1980, as renter-occupied households increased by nearly 15% (see Table 4.3-5). However, tenure composition did not change substantially from 1970 to 1980, as renter-occupied housing only increased by 1.1% during that period. Recent additions to the City's renter-occupied housing supply suggest that this form of housing may still constitute more than 57% of the City's occupied housing.

TABLE 4.3-5

RENTER-OCCUPIED HOUSEHOLDS IN OAKLAND
1960-1980

Year	Renter-Occupied Households	% of Total	Change No.	Change %
1960	70,262	52.5	--	--
1970	80,000	57.6	9,738	13.9%
1980	80,852	57.1	852	1.1

Source: U.S. Bureau of the Census, 1960, 1970 and 1980.

Proposed Project

The project site lies in Census tract #4034. According to the 1980 Census of Population and Housing, there is a much greater amount of renter-occupied units (92% of the total year-round housing units in the tract) as compared to owner-occupied units (8% of the total). In 1980, 8% of the housing in the tract was vacant for rent; 16% was for sale. These figures indicate an adequate supply of vacant housing in this tract, as areas with vacancy rates above 5% are usually not considered "tight" markets.

Throughout the tract, the majority of dwelling units (68%) house one person; 24% house two people.

There are currently 47 renter-occupied units on the project site including one manager's unit. Approximately 90 people are housed on-site; of these, an estimated ten are over 62 years of age and four are under 18 years. Three of the current households moved in between 1958 and 1959; three between 1961 and 1968; 11 between 1974 and 1979; and the remainder of the current households have moved in since 1981. The average rent per unit is $505.91; this is expected to increase to $532.96 by the end of 1988.[2]

4.3.2 IMPACTS

The proposed project would require the removal of the existing 47-unit Jackson Palms apartment complex, resulting in the displacement of its approximately 90 residents. As shown in Table 4.3-4, Oakland's overall housing vacancy rate in 1985 was approximately 5%, and as previously stated, the census tract in which the project site lies had a vacancy rate of 8% in 1980; thus, replacement housing is available in Oakland. Some replacement housing is available in the immediate neighborhood at rents comparable to those of the existing building, as advertised in the classified ad section of the Oakland Tribune.

According to the Bay Area Council, the median rent in Oakland in September 1987 was $575 per month, $70 per month more than the current average rent at the existing apartment complex.[3] However, it must be noted that the Bay Area Council's average is taken of <u>advertised</u> rents, which tend not to include lower cost housing.

Although the project would remove 47 existing housing units, 238 units would be constructed, for a net gain of 191 housing units within Oakland's overall housing stock. Units within the proposed project would be condominiums; they are expected to be priced from $115,000 for studios, from $135,000 for one-bedroom units, and from $175,000 for two-bedroom units.

The project could increase demand for moderate income housing units in the area since the new units would be higher in price than the present ones. ABAG has identified a demand in Oakland for moderate income housing. The Tenant Assistance Programs, as mandated by the City of Oakland and proposed by the client, would assist displaced residents in finding new moderately-priced housing.

4.3.3 MITIGATION MEASURES

In order to offset the impact of displacing 47 households, the project sponsor should provide tenant assistance at least to a level of that required by Oakland's Condominium Conversion Ordinance, including adequate tenant notification, reimbursement of moving costs, inducements for tenants to become owners in the conversion, and assistance in identifying locations of other affordable housing. The subdivider is required to provide a

Preliminary Tenant Assistance Program (PTAP), consisting of at least two parts: efforts to minimize tenant displacement, and tenant relocation assistance. The City of Oakland will not issue a demolition permit for the existing structure until all existing tenants have been provided tenant assistance as required by the City.

The project sponsor has proposed a Tenant Assistance Program that would include 270 days' (nine months') written notice to move for each tenant upon the City's approval of the Tentative Subdivision Map. According to the City of Oakland's tenant assistance standards, the project sponsor may not evict any tenants except for just cause during the period from the filing of the tentative subdivision map to the start of the subdivider's sales program. This eviction clause is not part of the project sponsor's proposed assistance program, since the building will be demolished in order to construct the new residential tower.

The project sponsor's Assistance Program provides displaced residents with an allowance for utility, cable television, water, and telephone hookups in tenants' new locations. The Oakland tenant assistance standards do not include allowances for utilities, cable television, water, and telephone hookups; the Oakland standards encourage displaced residents to relocate into the new building on the same site, once the new project is completed. The City of Oakland benefits include at the start, a discount of 10%, or 5% plus 1% on new residential unit rental for each full or partial year of tenancy, whichever discount is larger, on a new tenancy on the same site. The project sponsor's Tenant Assistance Program does not include these provisions.

In terms of reimbursement for moving expenses, the project sponsor's assistance program is more comprehensive than the minimum required by the City of Oakland. The project sponsor offers reimbursement for all of the tenant's costs to move anywhere in the Bay Area, or a payment of two times the then monthly rent. Oakland's Tenant Assistance Standards will pay as much as $1,500 for documented moving expenses to anywhere in the nine-county Bay Area, or $300 in cash without the need to substantiate any costs. The project sponsor's program does not yet include a mandatory two-week payment period of moving/relocation expenses after relocation takes place; this clause is part of the City of Oakland's Condominium Conversion Ordinance.

The City of Oakland has rent control stipulations as part of their tenant assistance program; these clauses are specific and intended to keep rents reasonable for tenants who choose to remain in a building which has undergone condominium conversion until the units are sold. These rent control clauses are not part of the project sponsor's proposed Tenant Assistance Program since this is a new building.

The project sponsor has proposed to provide senior citizens and handicapped tenants with a rental location service to help find new living accommodations and assistance in transportation to find new housing; and first month's deposit on a new rental apartment when a lease is signed. All tenants who remain in the existing building until given notice to move would receive free rent for the last 60 days (eighth and ninth months) of the 270-day notice period.

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[1]Oakland City Planning Department, Housing Activity in Oakland: 1982, 1983, and 1984. December, 1985.

[2]Project sponsor.

[3]Bay Area Council, Bay Area Compendium of Housing Data, September 1987.

4.4 GEOLOGY & HYDROLOGY

4.4.1 SETTING

Topography and Site Description

The project site is gently sloping from southwest to northeast; elevations range from approximately +38 feet Oakland City Datum (OCD) at 14th Street to about +28 feet OCD at 17th Street.[1] The property is presently covered by a residential structure and paved parking lot, rendering it nearly completely impermeable.

Regional Geology

The project site is in the central Coast Range Geomorphic Province of California. This province extends from Northern California to the Transverse Ranges in Southern California. The Coast Range landscape consists of a northwest-trending series of mountain ranges and intermontane valleys. The site is located on the east side of one of these intermontane valleys on nearly level topography of the Coastal Plain.

The rugged Coast Ranges were created by tectonic forces that compressed ancient sedimentary deposits into a subparallel series of structural arches and troughs. These folds were subsequently right-laterally faulted, uplifted and eroded into their present configuration. Repeated tectonic events in the San Francisco Bay Area resulted in a complex geologic structure with numerous folds, faults and cross faults. Today, the most significant manifestation of these forces is the San Andreas Fault system, a group of active faults that were responsible for at least five major Bay Area earthquakes in the last 200 years.

Site Geology and Soils

The site is located in an area that was formerly part of a marsh system along the margin of the San Francisco Bay. The extent of these marshes has greatly diminished over the past 100 years as urbanization increased and marshes were artificially filled to accommodate residential, commercial and industrial demand. Based on the 1874 map of Alameda County, the old shoreline and adjacent tidal flats of Lake Merritt extended west of what is now Harrison Street. An old slough or creek occupied what is now 20th Street; the adjoining tidal flats and the creek channel extended toward the project site which was

covered by dune sand of the Merritt formation.[2] The slough was part of the channel system within the marsh, carrying tidal waters in and out of the estuary, probably to Lake Merritt, which was also a tidal water body. The dune sands that formed along the tidal flats on the alluvium (San Antonio Formation) washed down from the Berkeley Hills.[3] Even though there are no longer tidal flats along the perimeter of the Lake, it is still partly tidal. The level of the Lake is controlled by reversible pumps operated by the Alameda County Flood Control District along the west side of Lake Merritt. During storms, water is pumped out of the Lake to the Oakland estuary, and at low water levels, tidal waters are allowed into the Lake for recreational use.[4]

Based on soil borings completed in the vicinity of the site, the following subsurface conditions are anticipated: approximately zero to ten feet of artificial fill, underlain by 24 to 30 feet of fine to medium-grained Merritt sand. The Merritt sand is underlain by about 60 to 75 feet of San Antonio Formation consisting of silty sandy clay interbedded with dense sand and gravel. This is underlain by about 400 feet of Alameda clay. No Bay mud was encountered.[5]

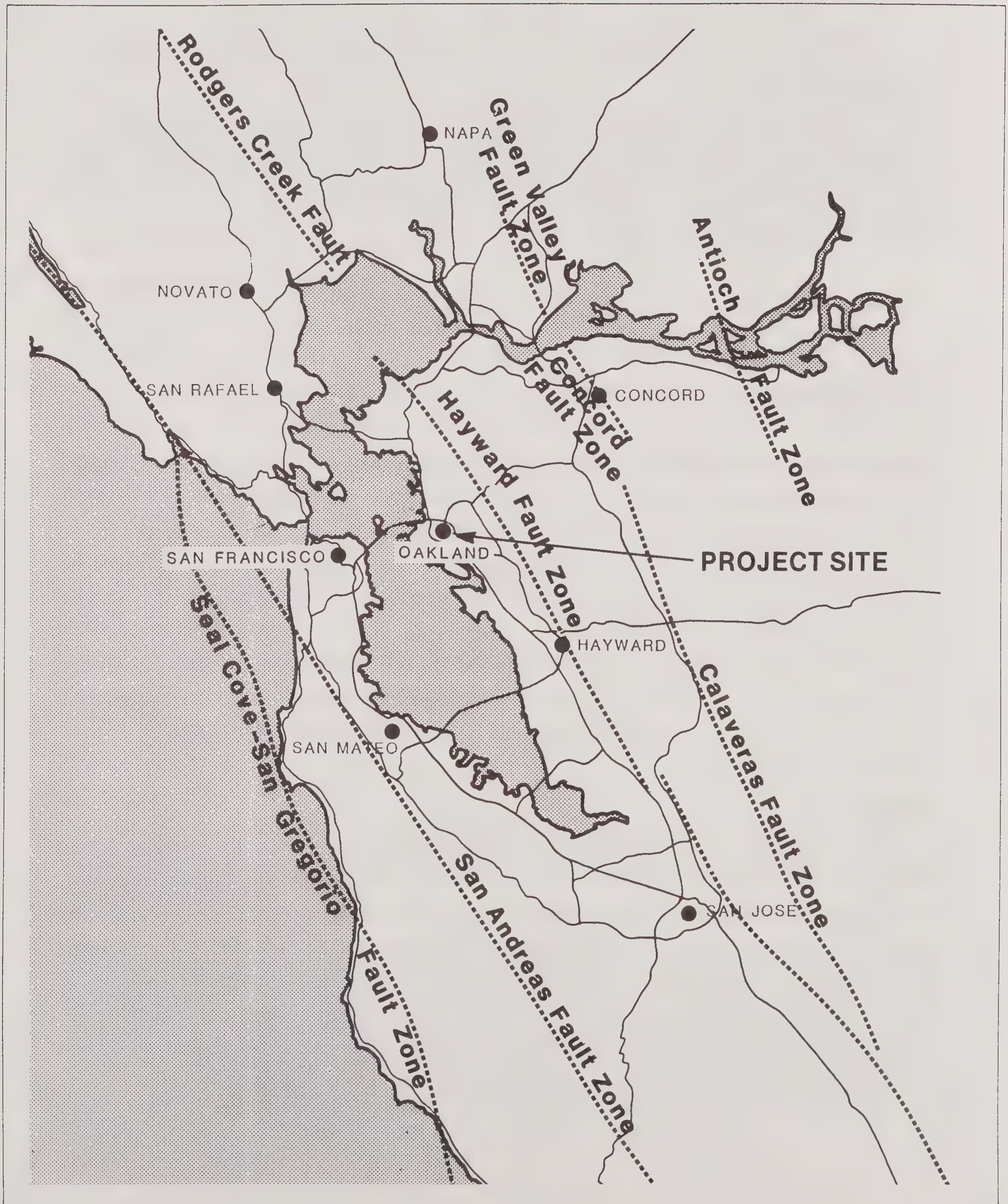
Hydrology

During the soil borings performed by Woodward Clyde in 1984, groundwater was encountered at depths varying from elevation +20 feet OCD to +35 feet OCD.[6] Since the water table is usually higher by about two to four feet during the winter months, groundwater levels could be expected to vary by several feet due to seasonal effects.[7]

Seismicity

The project site, like the entire Bay Area, is in a seismically active region. There are four recently active faults capable of causing groundshaking on the project site. The Seal Cove Fault, San Andreas Fault, the Hayward Fault and the Calaveras Fault are located about 21.5 miles southwest, 15.5 miles southwest, 3.5 miles northeast, and 13.5 miles northeast of the site, respectively (Figure 4.4-1). These faults have produced earthquakes of Richter magnitudes 8.3 and 6.7. It is estimated that the faults are capable of producing earthquakes of Richter magnitude 8.3 (San Andreas) and 7.5 (Hayward and Calaveras).[8] There are no known active faults traversing the project site. The site is not within any Alquist-Priolo Special Study Zone.[9]

ACTIVE FAULT ZONES FIGURE 4.4-1



SOURCE: CALIFORNIA DIVISION OF MINING & GEOLOGY/JENNINGS

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4.4.2 IMPACTS

Geology and Soils

The proposed project would not affect the area's geology, except for disturbing the underlying sediments for foundation construction. The existing geological, hydrological and seismic conditions in the area would impose constraints on the project that would require special design considerations.

Vertical excavations would be necessary to approximately 24 feet below ground surface (about +8 feet OCD) for basement parking levels. The excavation would extend below the foundations of the adjacent buildings northeast and northwest of the site. Lateral and vertical movement of the material in which these buildings are founded could occur.

The natural earth materials below the foundation level are strong and only slightly compressible. Geotechnical studies conducted in the site vicinity indicate that the clay layers are highly over-consolidated and would will likely swell under the effects of the excavation and the relatively light building loads. A net decrease in pressure would occur since more weight would be removed by the excavation of existing soils than would be replaced by the proposed building. Prior experience with similar projects in the area indicate that this net decrease in pressure could cause the foundation soils to swell and heave both during and after construction.[10] The consultant indicated that foundation loads would recompress the heaving soils resulting in net additional settlement.[11]

Hydrology

The most significant factors affecting deep basement construction are temporary and permanent control of groundwater and the protection of adjacent structures (roads, sidewalks and buildings). Based on measured groundwater levels in the site vicinity, the proposed basement excavation would extend at least one foot below the measured groundwater level. It should be noted, however, that groundwater levels are subject to seasonal variation. The basement must be watertight with walls designed to withstand the water pressure. A permanent dewatering system could be installed below the foundation level to mitigate the potential for water seepage into the lower basement level.

Dewatering (lowering of the water table) during excavation could cause distress to surrounding building foundations through settlement.[12] Adjacent streets may also experience settlement which would impair the flow of traffic. The basement excavation would require dewatering using an interior collection system and sump pumping or by installing a shallow well point system around the site perimeter. The drainage water from the construction dewatering system would likely be sediment-laden. Discharging the water to the storm drains could cause additional sedimentation in Lake Merritt, which is the discharge point for storm runoff.

Seismicity

In the event of an earthquake along any of the major active faults in the Bay Area, the project site would be subjected to very strong to violent groundshaking.[13] Because of the proximity of the Hayward fault, this seismic feature probably would control the worst-case conditions of groundshaking at the site. In this case, a maximum probable event of M7.5 could occur at a minimum distance of seven miles. Maximum credible rock accelerations from such an event would be equivalent to at least half the force of gravity (0.5g).[14,15] Recent studies by Campbell (1985) and Joyner (1987), however, indicated that bedrock acceleration values of 0.7g to 0.9g can occur within the vicinity of an active fault.[16,17] However, these bedrock accelerations would be attenuated to lower values by the unconsolidated sediments underlying the sites.

The groundshaking effects of 0.5g acceleration are predicted to be equivalent to Intensity IX or higher on the Modified Mercalli Scale.[18] This could include general damage to foundations, reservoirs and underground pipes. The geotechnical consultant stated that the height of the proposed building may facilitate amplification of seismic waves within the structure.[19]

The proposed project is located within Hazard Zone II as described in the Environmental Hazards Element of the Oakland Comprehensive Plan.[20] Within Hazard Zone II, liquefaction is a potential effect of groundshaking. This phenomenon usually occurs in saturated, loose to moderately dense sand. as the shaking soil compacts, an increase in water pressure results in the material's acting as a liquid, or "quick" sand. The potential for liquefaction of foundation soils at the project site is low.[21]

Tsunamis, or great sea waves, can be generated by any large-scale, short-duration earthquake, primarily on the ocean floor. The tsunami effects along the California coast from offshore earthquakes are usually manifested by rapidly changing tides.[22] The project site is not in an area subject to inundation by tsunamis.[23]

The project site is not within a flood-prone area, nor would it be affected by earthquake-induced or oversaturation-induced landslides.[24]

4.4.3 MITIGATION MEASURES

A preliminary geotechnical evaluation has been completed for the project site. The evaluation covered site conditions related to geology, soils, groundwater and seismicity. The report contained general recommendations for site grading, shoring, dewatering, water proofing, retaining walls, foundation and seismic design related to a 19-story structure with two subsurface parking levels. The following preliminary mitigation measures were recommended to reduce the potential impacts of the project:[25]

Geology and Soils

- Prior to excavation, the adjacent structures could be underpinned to prevent settlement. Shoring should be designed to prevent loss of granular pit wall material into the excavation.
- The building would be supported on conventional foundations designed to withstand all loads including wind and seismic pressure.
- The basement retaining walls should be designed to withstand active soil pressures.

Hydrology

- A temporary dewatering system to dewater the excavation should consist of a blanket drain at the bottom of the excavation during construction.
- The exterior basement walls should be water-proofed to prevent seepage.
- A subdrain system could be installed around the basement walls.

Seismicity

- Seismic building design criteria should incorporate site specific conditions in order to mitigate potential effects of amplification.

- o Evaluation of liquefaction potential would be investigated. If the Merritt sand shows potential for liquefaction, foundation elements would be deepened to underlying clayey soils.

- o Potential for seismically-induced settlement would also be investigated during detailed geotechnical studies.

- o Seismically-induced lateral forces would be resisted by laterally confining earth pressures and by friction between the concrete foundation and the supporting foundation soils.

The following mitigation measures are recommended by the EIR consultant.

- o Similar projects within the vicinity of the site utilized a shallow well point system within the site boundaries. Deep dewatering wells were <u>not</u> recommended since they could cause settlement of adjacent structures. In addition, it was recommended that the well points be operative before excavation began.

- o Construction should take place during the dry season (May to October) to reduce the amount of runoff entering the excavation. The water table would be a few feet lower, thus, slightly reducing the volume of water to be removed.

- o To avoid discharging sediment-laden water from dewatering operations into Lake Merritt through the City storm drainage system, the water should be detained in a settlement tank where the sediments would be allowed to settle out prior to flowing into the Lake. A settlement tank should be placed on the site during the temporary dewatering phase and removed after completion of foundation construction and waterproofing.

- o The City, as lead agency, should provide assurances for implementation of mitigation measures, such as requiring the project sponsor to post a refundable bond to cover costs for emergency abatement and cleanup activities as a condition of the grading permit.

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[1] Oakland City Datum is 2.998 feet above mean sea level.

[2] Woodward-Clyde Consultants, <u>Preliminary Geotechnical Evaluation, Kaiser Center Master Plan 2, Oakland, California</u>; Project No. 14960B, San Francisco, December 1, 1980, page 2 and Figure 1.

[3] Woodward-Clyde Consultants, <u>Geotechnical Engineering Report, Cadillac Fairview Building, Oakland, California</u>, Project No. 15137A, Oakland, December 4, 1981, page 5.

[4] Rick Baker, Alameda County Flood Control District, telephone communication, December 31, 1981.

[5] Geotechnical Engineering Inc., Report-Consultation: Preliminary Geotechnical Evaluation Proposed High Rise Condominiums for TRI Development Co., 1540 Jackson Street, Oakland, California, 1986.

[6] Woodward-Clyde Consultants, Preliminary Geotechnical Evaluation of the Lake Point Towers, Site Results Report, 1984.

[7] Associated Geotechnical Engineers, Inc., Geotechnical Engineering Investigation for Hong Kong/U.S.A. Project, Oakland, California. Project No. 100-2, SJ-2610. San Jose, September 13, 1978, part I, page 5.

[8] R.W. Greensfelder, Maximum Credible Rock Acceleration from Earthquakes in California. California Division of Mines and Geology Map Sheet 23, 1974.

[9] This zone has been defined by the legislature as a quarter-mile-wide strip following the trace of any active fault. Construction within this zone is subject to special geotechnical studies, and buildings designed for human occupancy are prohibited within 50 feet of the known trace of an active fault.

[10] Woodward-Clyde Consultants, 1981, op. cit., pages 7 to 9.

[11] Geotechnical Engineering Inc., op. cit.

[12] Woodward-Clyde Consultants, 1981, op. cit., page 14.

[13] Borcherdt, R.D., et al., Maximum Earthquake Intensity Predicted for Large Earthquakes, Southern San Francisco Bay Region, U.S. Geological Survey Map MF-709, 1975, scale, 1:125,000, Sheet 2.

[14] R.W. Greensfelder, Maximum Credible Rock Acceleration from Earthquakes in California. California Division of Mines and Geology Map Sheet 23, scale, 1:2,500,000, 1974.

[15] g equals the acceleration of gravity.

[16] K.W. Campbell, Strong Motion Attenuation Relations: A 10-Year Perspective, 1985, Earthquake Spectra, v. 1, p. 759-804.

[17] W.B. Joynder, Strong-Motion Seismology, 1987, American Geophysical Union, U.S. National Report 1983-1986.

[18] R.D. Borcherdt, op. cit.

[19] Geotechnical Engineering Inc., op. cit.

[20]City of Oakland, Environmental Hazards, Oakland Comprehensive Plan, 1974.

[21]Woodward-Clyde, op. cit.

[22]Diane Pierzinski, "Tsunamis," California Geology, March, 1981.

[23]City of Oakland, 1974, op. cit.

[24]City of Oakland, 1974, op. cit.

[25]Geotechnical Engineering Inc., op. cit.

4.5 VISUAL QUALITY

4.5.1 SETTING

Surrounding Neighborhood

The project site is located within the City of Oakland's Lakeside neighborhood near Lake Merritt. The Lakeside neighborhood is characterized by a diversity of residential building types, ranging from two to 14 stories in height. Buildings are representative of the apartment construction booms of the 1920's, 1950's and 1960's. Existing residential structures include Renaissance Revival, Art Deco and Mediterranean/Spanish architectural styles.

The architectural character of the neighborhood relies on similarities in building height form, scale, color, materials, finishes, setbacks, treatment of parking and landscaping rather than a similar architectural style. Jackson Street, between 15th and 17th Streets, is currently occupied by numerous three- and four-story apartment buildings which are typical of 1950's and 1960's construction. Buildings on the east side of Jackson Street are box-like in appearance, and are generally characterized by flat roofs with stucco facades. Building design emphasizes building mass by utilizing horizontal bands of windows separated by dark panels which contrast with buff, tan and pink stucco facades. Buildings along the west side of Jackson are similar in height and appearance. However, these structures are more interesting architecturally due to building articulation provided by projecting balconies, roof overhangs and bay windows. Most of the residential buildings along Jackson Street employ landscaped setbacks which average ten to 15 feet in depth, and incorporate parking within the structures, at or slightly below grade.

The project site, located mid-block on Jackson between 15th and 17th Streets, is currently occupied by a three-story 47-unit apartment complex (see Figure 4.5-1). The only visually notable site features are several mature palm trees planted along Jackson Street (hence the name Jackson Palms) in front of the existing structure.

Buildings on the same city block as the proposed project site average 41 feet in height. Across Jackson Street to the west, buildings are approximately 45 feet tall, although four of the buildings exceed 70 feet. Taller structures ranging from 80 to 180 feet are located north of the site closer to Lake Merritt.

PHOTOGRAPH OF EXISTING SITE

FIGURE 4.5-1

SOURCE EIP ASSOCIATES

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Views

The area visible from the project site is limited to the foreground. Views are shortened by adjacent and surrounding urban development which is generally of the same height as the Jackson Palms building. Extended views of off-site areas would be available above the generally consistent three- to five-story development including those of Lake Merritt and the Oakland Hills.

The site is generally not seen from off-site locations; views are screened and blocked by existing urban development. In addition, the height and non-descript appearance of the Jackson Palm building does not draw attention to the site. Only the curbside palm plantings which achieve 90 feet in height are visible from any distance. The site would be visible from additional areas if a structure of additional height is placed on the property.

4.5.2 IMPACTS

The proposed project would replace the three-story Jackson Palms building with an eighteen-story residential condominium structure. The project would include the residential building, landscaping and parking for 285 vehicles on two levels below grade and one level at grade.

The proposed building is tripartite in nature, consisting of a base, middle section and top section. The base would include the building's ground floor and second floor while the middle section would accommodate the greatest portion of the building's mass (floors 3 through 15); the top would step back at floor 16 and again for floors 17 and 18 with a pyramidal roof profile crowning the building. Pedestrian and vehicular access, entry lounge and mechanical functions would be contained on the ground level; residential amenities including pool, exercise facilities, sunrooms, game rooms and snack bar would be found on the second floor. One residential floor plan would be repeated on floors 3 through 15, while a different scheme would be employed for floors 16 through 18.

The proposed building is representative of several architectural styles, reflecting numerous historic qualities of Oakland architecture. Horizontal and vertical emphasis in detail articulation, typical of buildings from the 1930's and 1940's, would be evident in the proposed Jackson Street facade. Building mass would be broken up through architectural

design techniques. The building would be set back from the street resulting in a less imposing presence on the block. The projecting decks would give the impression of the bays and bay windows commonly found on older residential buildings within the Lakeside neighborhood. The Jackson Street facade would be embellished with a centrally located vertical element starting above the formal entry and terminating in a peaked pediment with an arch relief at the top of the building. The portico at the base of the building would serve both pedestrians and vehicles. The central vertical element would lead the viewer's eye to the top pediment flanked by symmetrical glass walls reminiscent of a Palladian window. The building's pyramidal shaped crown would complete the design. This central axis results in a building design which is both formal and symmetrical.

The building's exterior would be clad in dryvit, a prefabricated panel similar in texture to stucco. Colors selected for the proposed project would be earthtones, similar to those currently found in the neighborhood. Balconies/decks would be of a darker tone to contrast with the main facade material and add visual interest and increase the play of light and shadow.

At 192 feet in height, the proposed project would be more than twice as tall as other existing buildings on this block of Jackson Street which range from 45 to 70 feet in height.

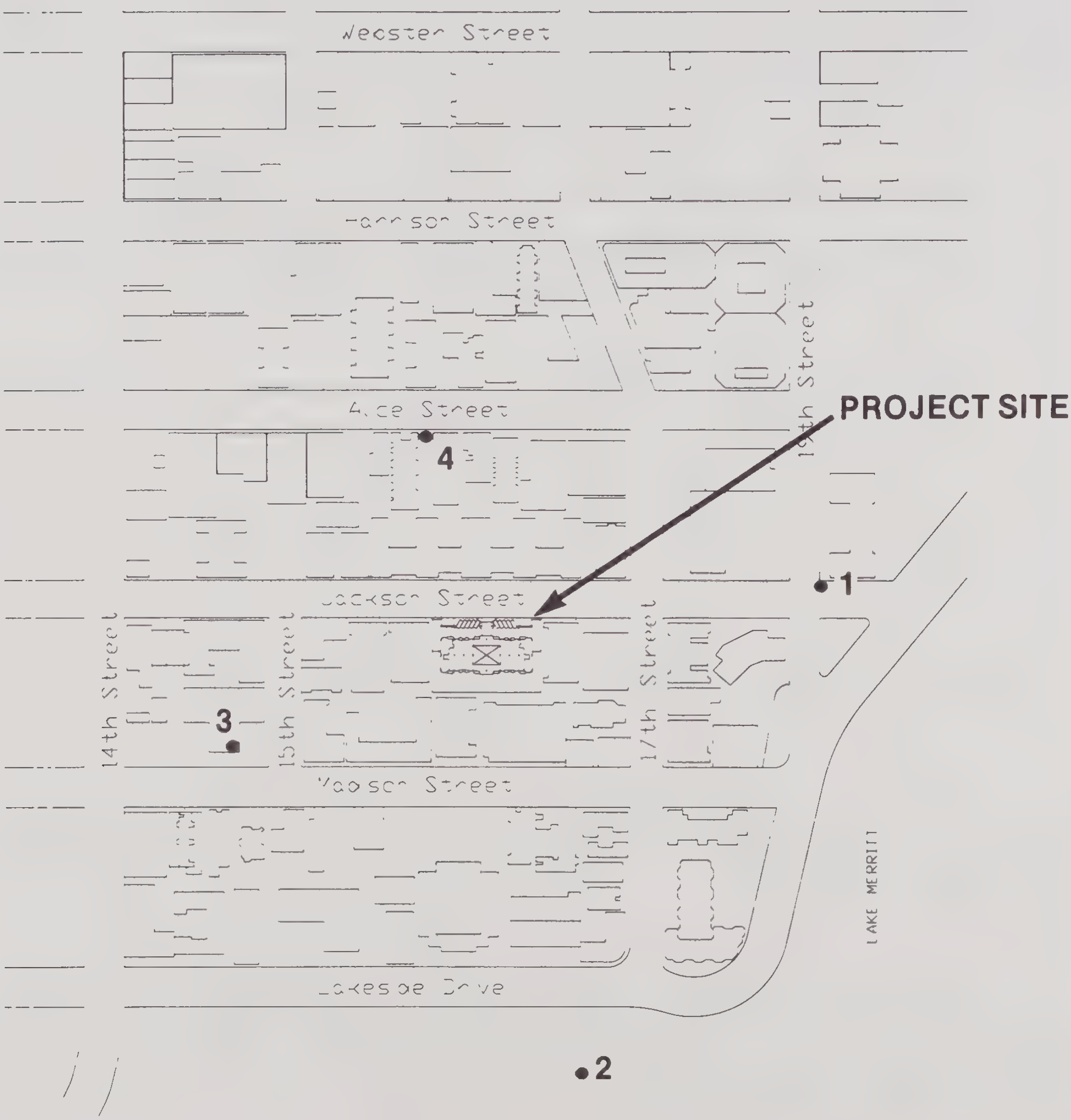
Visual impacts may result from glazing used on the upper floors of the proposed building. If the glass is highly reflective it could generate glare which may impact other residences in the area.

The proposed project would include the retention of existing mature palm trees along Jackson Street and the planting of additional landscaping. Overall, the project would add visual interest to the neighborhood.

Figures 4.5-3, 4.5-5, 4.5-7 and 4.5-9 illustrate existing conditions of the project site and surrounding neighborhood; Figures 4.5-4, 4.5-6, 4.5-8 and 4.5-10 provide a visual simulation of the site with the proposed project. Figure 4.5-2 provides a key to the locations from where photographs for each figure were taken.

KEY TO PHOTOMONTAGE VANTAGE POINTS

FIGURE 4.5-2



1. Figures 4.5-3, 4.5-4
2. Figures 4.5-5, 4.5-6
3. Figures 4.5-7, 4.5-8
4. Figures 4.5-9, 4.5-10

SOURCE: SQUARE ONE FILM & VIDEO, SUE ASSOCIATES

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VIEW FROM 19TH AND JACKSON STREETS, EXISTING.

FIGURE 4.5-3

SOURCE: SQUARE ONE FILM & VIDEO

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VIEW FROM 19TH AND JACKSON STREETS, WITH PROJECT.

FIGURE 4.5-4

SOURCE SQUARE ONE FILM & VIDEO

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VIEW FROM LAKE MERRITT, EXISTING.

FIGURE 4.5-5

SOURCE: SQUARE ONE FILM & VIDEO

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VIEW FROM LAKE MERRITT, WITH PROJECT.

FIGURE 4.5-6

SOURCE SQUARE ONE FILM & VIDEO

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VIEW FROM HILL CASTLE APARTMENT BUILDING ROOF, EXISTING. FIGURE 4.5-7

SOURCE: SQUARE ONE FILM & VIDEO

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VIEW FROM HILL CASTLE APARTMENT BUILDING ROOF, WITH PROJECT.

FIGURE 4.5-8

SOURCE SQUARE ONE FILM & VIDEO

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VIEW FROM ALICE STREET, EXISTING. **FIGURE 4.5-9**

SOURCE: SQUARE ONE FILM & VIDEO

87203

VIEW FROM ALICE STREET, WITH PROJECT.

FIGURE 4.5-10

SOURCE. SQUARE ONE FILM & VIDEO

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As shown in Figures 4.5-3 and 4.5-4, the proposed project would be partially visible from the corner of the 19th and Jackson Streets. However, most of the first 16 floors would be screened through the retention of existing trees. Views of the peaked pediment and arch relief at the top of the building would add visual interest for pedestrians and drivers in this area. The proposed building would not block any existing views from this location.

Figures 4.5-5 and 4.5-6 show existing and proposed views from Lake Merritt. From this vantage point, the proposed project would not block existing views, but would add to joggers', pedestrians', and drivers' roofline view. The top five or six stories of the proposed project would be visible from this location; it would not appear to the viewer to be as massive as other highrise structures closer to the lake.

Figure 4.5-7 shows the view from the roof of the ten-story Hill Castle Apartment building. As shown in Figure 4.5-8, views of Lake Merritt and the Oakland Hills would be partially screened or completely blocked by the proposed 1540 Jackson Street building. Existing views most impacted would include those from the floors at 45 feet or above which are located to the south and west of the project site.

As shown in Figures 4.5-9 and 4.5-10, the proposed project would be visually apparent and somewhat imposing in the neighborhood due to its greater height and mass than many surrounding buildings. However, project design details, such as the sculptured top, stepbacks, balconies, and setback from the street mitigate some of the adverse visual impacts which would result from a project of this size.

4.5.3 MITIGATION MEASURES

The following mitigation measures are intended to diminish the visual impacts created by the project.

Mitigation Measures Recommended for the Project:

- o The middle and top sections of the building should be further stepped back from the sides to decrease view blockage from surrounding areas.
- o Landscaping guidelines should provide pedestrian amenities along Jackson Street. Such amenities should include plantings which buffer and separate the circular driveway from the sidewalk and street furniture.

- To reduce the potential impact of glare on surrounding buildings and on views of Lake Merritt and the Oakland hills, the residential tower should utilize only non-reflective materials and tinted or non-glare glass.

- Rooftop mechanical equipment should be shielded from view in anticipation of future development.

- The fact that the building is over 100 feet taller than the highest existing bulding on the block may constitute a significant visual impact. This impact could only be mitigated by a reduction in height of the proposed structure.

4.6 ENERGY

4.6.1 SETTING

The Pacific Gas and Electric Company (PG&E) supplies both natural gas and electricity to customers in Oakland. PG&E generates electrical energy from various sources including oil, natural gas, wind, cogeneration, solid waste, hydroelectric, geothermal and nuclear power.[1] PG&E foresees no difficulty in supplying the project with sufficient natural gas and electricity from existing and planned sources.[2]

New buildings in California are required to conform to stringent energy conservation standards specified in Title 24 of the California Administrative Code. The Code requires inclusion of state-of-the-art energy conservation features in building design and construction. The State allows developers to comply with the standards via the component performance standards method, which requires that a project sponsor do one of the following: incorporate into the building a set of specific energy-conserving design features, use non-depletable energy resources, or demonstrate that the building would comply with a specified "energy budget," that is, consume no more than a quantity of energy specified according to its use type. Documentation showing compliance with standards is submitted with the application for the building permit and the standards would be enforced by the City of Oakland's Building Department.

4.6.2 IMPACTS

The primary project impact on energy resources would be consumption of nonrenewable energy during project construction and operation. In addition, project-generated motor vehicle traffic would consume gasoline, oil and diesel fuel during resident and service person transportation to and from the project site.

Construction

Demolition of the existing building would require unknown amounts of energy. The energy usage from demolition is not expected to be of significant levels. The total estimated energy usage for the construction of the proposed project would be 36 billion Btus.[3] By annualizing this estimate over the project's projected life, the annual energy usage for the project's construction amounts to 700 million Btus. This estimate includes gasoline, diesel fuel and electricity for building material fabrication and transportation, worker transportation, site development and building construction.[4]

Operation

Table 4.6-1 estimates the project's maximum allowable annual operational energy in accordance with Title 24 regulations. Natural gas and electricity requirements have been converted to at-source Btu in order to account for losses in energy that occur during generation, transmission and distribution of the various energy types.[5] The project's annual energy consumption would be about 27 billion Btu, the equivalent of about 4,820 barrels of oil.

There would be an additional unknown amount of energy required to heat and maintain the project's planned swimming pool. However, this is not anticipated to be of significant levels.

Project-related automobile transportation would cause additional, off-site energy consumption. For the project trip generation described in Section 4.2, project-related trips would require about 68,516 gallons of gasoline per year.[6] Converted to a common thermal energy unit, this gasoline use would equal about 9.6 billion Btu per year, the energy equivalent of 1,713 barrels of oil. The projected use is based upon the mix of highway vehicles in California in 1995.

An additional undetermined amount of transportation-related energy consumption would arise from project-related use of local transit systems. As traffic mitigation measures specified in Section 4.2 are implemented, transit energy use would increase but would be more than offset by decreases in private automobile energy consumption.

4.6.3 MITIGATION MEASURES

Statutory Requirements

The project sponsor is required by law to demonstrate compliance with the stringent standards of the California Administrative Code, Title 24, prior to issuance of a building permit. New buildings also must comply with the Uniform Building Code's strict requirements regarding insulation, glazing, weather sealing, choice of building materials and water and energy conserving plumbing fixtures. A number of design features that would aid the project's compliance with Title 24 standards are listed below. Features

TABLE 4.6-1

ANNUAL PROJECT ENERGY USE

I. PROJECT OPERATION

Land Use	Developed Space	Title 24 Allowance	Natural Gas (Therms)[1]	Electricity (kWh)[2]	Peak Electrical Load (kWh)	Total Operating Energy (million Btu)
Residential:						
Studios	110 DUs	15,300 Btu/sq.ft.	800	71,000	310	800
One-bedrooms	122 DUs	15,300 Btu/sq.ft.	1,200	102,000	450	1,200
Two-bedrooms	6 DUs	15,300 Btu/Sq.ft.	100	7,000	30	100
	plus	20,800 Btu/DU (water heating)	50			10
Health Club	12,416 sq.ft.	126,000 Btu/sq.ft.	2,000	200,000	100	2,200
Parking	98,100 sq.ft.	180,000 Btu/sq.ft.	18,000	2,043,000	700	22,700
SUBTOTAL OPERATING ENERGY			22,150	2,423,000	1,590	27,010

II. TRANSPORTATION

	Subtotal Transportation Energy (million Btu)
68,516 gallons of gasoline and diesel fuel consumed per year	9,592

III. CONSTRUCTION

	Total Construction Energy (million Btu)	Annualized Construction Energy (million Btu)
Project	36,000	700

IV. PROJECT TOTAL	37,302

[1] Assumes 10% of the total Btus would be generated with natural gas.

[2] Assumes 90% of the total Btus would be generated with electricity.

Source: EIP Associates

not specifically required by Title 24 and not included in the project proposal could be included as part of the project to further reduce energy consumption. However, these additional mitigation measures are not required by law.

None of the impacts identified are considered significant. Therefore, no mitigation measures are necessary to reduce significant impacts to non-significant levels. However, the following additional mitigation measures are provided as additional suggestions for further reduction of energy consumption:

Architectural:

- Reduce window surfaces on the north face to minimize heat loss.[7]
- Install openable windows enclosing air conditioned space.
- Minimize exterior surface area through the architectural design.
- Incorporate the use of the greenhouse effect for reduction of heating loads.[8]
- Use building overhangs or other horizontal sun shades to shade the south faces of the buildings to reduce cooling loads while maintaining glass area that would provide significant daylight contribution for reducing artificial lighting demands.
- Recess or fit windows facing east and west with vertical sun shades to provide adequate shading while allowing in enough natural light to significantly reduce artificial lighting demands.

Electrical:

- Use miniature fluorescent lamps to replace incandescent lamps in fixtures where possible.
- Use energy efficient high pressure sodium lighting for publicly used interior as well as exterior lighting where possible with time-clock or photocell control.

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[1] PG&E Annual Report, San Francisco, 1981.

[2] Brad Crotteau, Planning District Manager, PG&E, telephone communication, April 28, 1986.

[3] The British thermal unit (Btu) is the quantity of heat required to raise the temperature of one pound of water one degree fahrenheit at sea level.

[4] Hannon, B. et al.,"Energy and Labor in the Construction Sector," Science 202:837-847.

[5] The term "at-source" means that adjustments have been made in the calculation of the thermal energy equivalent (Btu) to account for energy losses that occur during generation, transmission and distribution of electrical energy. See Apostolos, J.A., W.R. Shoemaker and E.C. Shirley, Energy and Transportation System, California Department of Transportation, Sacramento, California, Project #20-7, Task 8, 1978.

[6] The California Air Resources Board's (CARB's) URBEMIS#1 computer model was used for estimating vehicular fuel use.

[7] Edward Mazria, The Passive Solar Energy Book, Rodale Press, Emmaus, Pa., 1979.

[8] Ibid.

ADDITIONAL REFERENCE MATERIAL USED:

Bay Area Air Quality Management District, Air Quality and Urban Development: Guidelines for Assessing Impacts of Projects and Plans, San Francisco, November, 1985.

Rau and Wooten, Environmental Impact Analysis Handbook, McGraw Hill, 1980.

4.7 CITY SERVICES

4.7.1 SETTING

Water Supply

The water supply for the area is under the jurisdiction of the East Bay Municipal Utilities District (EBMUD). Water is supplied from the 68.4-billion-gallon Pardee Reservoir on the Mokelumne River in the Sierra Nevadas. Principal storage within the City is at the 154-million-gallon Central Reservoir, located at the eastern termination of East 30th Street at 23rd Avenue. Approximately 105 million gallons per day (mgd) are consumed in the City of Oakland. Per capita consumption is about 205 gallons per day (gpd), compared with 130 gpd in San Francisco and 185 gpd in Los Angeles. Although part of this rate is attributable to Oakland's industrial sector, consumption is considered high and conservation a priority.[1]

The project site is served from EBMUD's Central Pressure Zone by way of a network of distribution lines interconnected with a 36-inch-diameter transmission pipeline under 26th Street. The Central Pressure Zone is EBMUD's largest pressure zone, with a total storage capacity of nearly 375 million gallons.

Adjacent to the project site, there is a six-inch cast iron water main under Jackson Street, a four-inch cast iron water main on 15th Street, a 12-inch cast iron water main on Madison Street and a 12-inch cast iron water main on 17th Street.[2]

Wastewater

The Special Sewage Treatment District No. 1 (SD l) of EBMUD was established in 1944 to provide for the treatment and disposal of sanitary and industrial wastewater from the cities of Oakland, Albany, Berkeley, Emeryville, Alameda and Piedmont. The facilities constructed for this purpose are designed with sufficient capacity to meet the projected needs of the District's service areas until the year 1995. The primary treatment capacity of the system is 290 mgd dry weather flow, and the second treatment capacity is 168 mgd. Current treatment flows average 80 mgd dry weather flow.[3]

The City of Oakland owns and operates the sanitary sewers that convey wastewater to the EBMUD interceptor pipe for transmission to the EBMUD Water Pollution Control Plant,

located near the foot of West Grand Avenue. The treatment provided by the plant is designed to meet State and federal regulations concerning wastewater treatment and disposal.

Although the City operates separate storm and sanitary sewer systems, the sanitary system's design capacity is exceeded during some winter storms due to infiltration of stormwaters into the sanitary collection system. The City of Oakland has completed an Infiltration and Inflow study to design a program for eliminating overflows resulting from stormwater inflow infiltration.

Solid Waste Disposal

The Oakland Scavenger Company is under contract with the City of Oakland to perform solid waste disposal for all properties located within the City. Solid waste is transported to the Davis Street Transfer Station in San Leandro, and then to a 1,600-acre landfill site at Altamont. The landfill site is owned by Oakland Scavenger Company and has a useful life of 70-96 years, depending on recycling. The company's service area includes about 90% of Alameda County, serving a population of approximately 900,000. Oakland Scavenger hauls somewhat less than 3,000 tons of refuse a day from within this service area.[4]

Gas and Electricity

Natural gas and electricity are supplied to the project site by Pacific Gas and Electric Company (PG&E), East Bay Division. The PG&E service area extends to 47 of California's 58 counties and covers about 94,000 square miles of northern and central California. Electricity is generated by a combination of hydroelectric and thermal generating plants, with peak consumption running at about 15,000 megawatts in the entire service area. Natural gas is supplied from sources in California, Texas and Canada; current systemwide annual consumption is about 809 billion cubic feet.

Electricity to the project site is distributed through PG&E's Substation L, located near the corner of 20th Street and Telegraph Avenue. The substation capacity is 90 megawatts, and is able to accommodate a third megawatt transformer bank. Current peak demand within the substation's service area is about 55 megawatts.[5]

Police Services

The Oakland Police Department provides 24-hour emergency response and preventive patrol services to the project site. The site is located in the Department's Central District, close to its boundary with the Northern Fringe District. There is currently one police vehicle on that beat and two others in the area. There is also one walking officer in the Central District during the day and another walking officer in the evening. Their shifts overlap between 3:00 p.m. and 6:00 p.m. when office workers would be leaving at the end of the day.

Fire Protection

The project area is provided with fire protection service by the Oakland Fire Department. The proposed project is Station 12 at 822 Alice Street. Engine 1 is also close to the site and is located at the corner of 16th and Martin Luther King. In the event of a fire, the initial response would include an engine company and a ladder company. A third engine company at 8th and Ellis could also respond. The first equipment would arrive at the scene within two to three minutes of receiving an alarm.[6]

The Oakland Fire Department has an Insurance Service Offices Rating of "1," the highest rating given. Fire service throughout the City of Oakland may be summoned by dialing the Emergency 911 telephone number.

4.7.2 IMPACTS

Water Supply

The proposed project is expected to generate housing for approximately 345 persons.[7] Based on an average water consumption rate of 124 gallons per person a day, the project would generate an average net water consumption of about 35,600 gallons per day. This represents a net increase in water use of 13 million gallons a year. Water use could be higher or lower than this estimate, depending on air conditioning and other equipment.[8]

The water supply network serving the project site is capable of serving the additional flow demands of the proposed project. At the time of the application for new connections, the system will be examined to determine if some minor local improvements are required. The project could best be served by connections to the Jackson and Madison mains.[9]

Wastewater

The additional base flow of wastewater generated from the project is expected to average 0.039 mgd, or less than 0.05% of the system's average daily flow. The peak flow, however, would be about 0.117 mgd. EBMUD indicates that local collection and facilities are adequate to handle this flow, and that the project will not therefore have any adverse impacts in the EBMUD collection and treatment facilities. The project could, however, contribute to a capacity problem for the downstream sewer mains as other areas of the basin have flow increases due to new development. It is estimated that an additional 6.45 mgd peak flow will be generated in the sewer basin as a result of future growth of which .117 mgd peak flow is represented by the proposed project. The City of Oakland will construct a new by-pass facility to handle increased flows generated by this and other projects in the vicinity. The City estimates that its cost for increasing relief sewer line sizes to accommodate the growth estimated for the area is $2,607,530 (1988 figure). The cost to the City of this project, proportionate to its contribution of peak flow to total anticipated peak flow in the basin would be $47,300 in 1988 cost.

Solid Waste Disposal

Based on an average solid waste production of 2.5 lbs. per person per day, the proposed project would generate a net increase of approximately 720 pounds of solid waste a day, or approximately 131 tons a year. The daily figure would represent less than 0.1% of Oakland Scavenger Company's current daily loading.[10]

Gas and Electricity

The proposed project would generate an energy demand of 2.43 million kWh of electricity and 18,000 therms of natural gas annually. These estimates are based on the predicted consumption rates of electricity and gas per year by gross square foot of built space.

Police Services

It is difficult to anticipate the exact degree of impact, particularly with other recent office developments in the same general area (e.g., Lake Merritt Plaza, Raymond-Kaiser Engineers). An increase in manpower may be required with an additional foot patrol or evening officer.

Fire Protection

Although highrise residential structures can present major fire-suppression problems, existing regulations in the Oakland Fire Code, the Oakland Building Code and Title 19 of the California Administrative Code are expected by the Oakland Fire Prevention Bureau to preclude such problems in the case of the proposed project. On upper floors where fire-fighting equipment may not gain access from the outside, highrise fires are controlled from inside the building. Water pressure at nearby hydrants is considered adequate for department needs. It is anticipated that the Fire Department's level of service would not be affected.

4.7.3 MITIGATION MEASURES

Water Supply

The project sponsor should work with the City Engineering and Design Services Department when project designs are in a more detailed stage to determine what local system improvements are needed to serve the site. The project sponsor may be requested to contribute to the cost of local improvements necessitated by the proposed project.

Wastewater

The project sponsor will be required to pay a Wastewater Capacity Fee per dwelling unit. This fee is a one-time charge that will be paid to EBMUD prior to a wastewater hookup. The fee amount will be based on an estimate of wastewater volume produced by the project based on such factors as building square footage, number of employees and type and number of water fixtures.[11]

The project sponsor will also be required to pay a mitigation fee to cover the cost to the City of increasing relief sewer line sizes to accommodate this project's share of contribution to the area's estimated growth. Proportionate to the projects contribution of peak flow to total anticipated peak flow in the basin, the mitigation fee would be $47,300 in 1988 cost. This cost should be adjusted for inflation when the fee is paid.

Solid Waste Disposal

The project sponsor should encourage project tenants to patronize an office paper recycling service, and a compactor may be used to reduce the number of required dump truck trips.

Gas and Electricity

The proposed project will be designed in accordance with the energy conservation standards of Title 24 of the California Administrative Code. The code requires that the structures comply with specified prescriptive standards for construction details such as required insulation vapor barriers, window glazing and infiltration. The project may incorporate alternative designs that do not cause more energy to be consumed than would be consumed by designs based on the prescriptive method. Recommended mitigation measures are presented in Section 4.7, Energy.

Police Services

To minimize the potential impacts of criminal activity on the project facilities and to reduce the need for additional police or private security personnel, the Police Department recommends that the project designers meet with the Police Community Services Division to discuss crime prevention through environmental design. The following security measures should be considered for incorporation within the project design:[12]

- Access and egress of vehicles and pedestrians should be controlled or observed by on-site security.
- The project sponsors will be required to implement security enforcement measures cited in the City's Commercial Burglary Prevention Ordinance, Article 4 of the Oakland Municipal Code.
- The Department encourages the project sponsor to meet with the Community Services Division to discuss:
  - general security problems
  - crime prevention techniques
  - crime prevention through environmental design
  - alarm and surveillance considerations
  - crowd and traffic control measures
  - Police Department procedures and their relationship to activities at the proposed project.

In addition, the Police Department requires the following measures:

- o Access control to both the garage and residential areas should be implemented. This may require the blending of physical hardware, electronic equipment and on-site security personnel.

- o Each individual unit should be equipped with locking hardware which is adequate to resist physical attack on both doors and windows. The developer should submit to the Chief of Police detailed hardware specifications, as they relate to security and access control.

- o The developer should submit written security plans to the Chief of Police detailing the following:

  - -- use of security personnel
  - -- evacuation procedures
  - -- bomb threat procedures

- o During construction, all construction companies should take adequate steps to protect both equipment and construction supplies from theft and vandalism. This may require the use of a security guard in the off-hours, including weekends and holidays.

Fire Protection

Required mitigation measures are provided in the Oakland Fire Code, the Oakland Building Code and Title 19 of the California Administrative Code. The project will comply with all prescriptive measures required by these regulations. The new buildings should be sprinklered throughout, and smoke/heat sensors, emergency lighting and door control systems should be incorporated into the project design.

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[1] Oakland Redevelopment Agency, Victorian Row/Old Oakland Draft Environmental Impact Report, page 212.

[2] Bill McGowen, EBMUD Facilities Planning, telephone communication, March 25, 1988.

[3] Dan Kimm, EBMUD Wastewater Treatment, telephone communication, March 28, 1988.

[4] Mike Crosotti, Engineering Manager of Oakland Scavenger Company, telephone communication, March 28, 1988.

[5] Nancy Elbing, Customer Representative, Pacific Gas & Electric Company, telephone communication, March 25, 1988.

[6]George Gray, Operations Chief, Oakland Fire Department, telephone communication, March 25, 1988.

[7]This number assumes an occupancy rate of one person per studio unit, and two people per two-bedroom unit. For one bedroom units, a rate of 1.83 people per unit was used; this number was obtained from the 1980 U.S. Census, Metropolitan Housing Characteristics, Oakland SMSA, Table H9, "Median Number of Persons Per Room, Owner-Occupied Units."

[8]California Department of Water Resources, Water Conservation in California, Bulletin 198-84. This number includes water consumption per capita on a city-wide basis, thus it includes industrial and business uses.

[9]Op. cit., Bill McGowen, EBMUD.

[10]Op. cit., Mike Crosotti, Oakland Scavenger Company.

[11]Op. cit., Dan Kimm, EBMUD.

[12]Patrol Division, Oakland Police Department, telephone communication, March 25, 1988.

4.8 AIR QUALITY

4.8.1 SETTING

Air Pollutant Problems and Trends

The 1970 Clean Air Act gave the U.S. Environmental Protection Agency (EPA) the authority to set Federal Ambient Air Quality Standards (AAQS). The Act indicated the need for primary standards to protect public health and secondary standards to protect public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. It also required that the Federal AAQS be designed to protect those people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by illness, and persons engaged in strenuous work or exercise (all termed "sensitive receptors"). In 1971, the EPA established Federal AAQS for five major "criteria" air pollutants: photochemical oxidants (ozone), carbon monoxide (CO), suspended particulates, nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).[1] State AAQS were established in California starting in 1969, pursuant to the Mulford-Carrell Act. The State and Federal AAQS, given in Table 4.8-1, provide acceptable durations for specific contaminant levels in order to protect sensitive receptors from adverse effects as indicated in Table 4.8-2.

The Bay Area Air Quality Management District (BAAQMD) operates a regional air quality monitoring network in order to gauge the Bay Area's progress toward attainment of federal and State ambient air quality standards. At monitoring stations throughout this network, readings are taken regularly of five major "criteria" air pollutants: photochemical oxidants (ozone), carbon monoxide (CO), suspended particulate matter of all sizes (TSP), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). A five-year summary of the data collected at the Oakland station (located at 822 Alice Street in the downtown area) and the corresponding federal or State air quality standards, are shown in Table 4.8-3. The data in Table 4.8-3 indicate that air quality in downtown Oakland is not in compliance with the State ozone standard. Because elevated ozone levels are a regional problem, concentrations measured at the Oakland station are likely to be representative of conditions at the project site. In contrast, levels of pollutants such as CO and TSP are more sensitive to nearby sources; the Oakland data, therefore, may not adequately represent on-site conditions.

TABLE 4.8-1

FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Standard	Federal Secondary Standard	California Standard
Ozone	1-hour	0.12 ppm	0.12 ppm	0.10 ppm
Carbon Monoxide	1-Hour	35.0 ppm	35.0 ppm	20.0 ppm
	8-Hour	9.0 ppm	9.0 ppm	9.0 ppm
Nitrogen Dioxide	1-Hour	--	--	0.25 ppm
	Annual	0.05 ppm	0.05 ppm	--
Sulfur Dioxide	1-Hour	--	--	0.5 ppm
	24-Hour	0.14 ppm	--	0.05 ppm
	Annual	0.03 ppm	--	--
Suspended Particulates[1]	24-Hour	150 $\mu g/m^3$	--	50 $\mu g/m^3$
	Annual	50 $\mu g/m^3$	--	30 $\mu g/m^3$

ppm = parts per million, ug/m^3 = micrograms per cubic meter

[1]The California standards are for particulate material less than 10 microns in diameter.

Source: California Air Resources Board.

TABLE 4.8-2

HEALTH EFFECTS SUMMARY OF THE CRITERIA AIR POLLUTANTS

Air Pollutant	Adverse Effects
Ozone	- Eye irritation - Respiratory function impairment
Carbon Monoxide	- Impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin - Aggravation of cardiovascular disease - Impairment of central nervous system function - Fatigue, headache, confusion, dizziness - Can be fatal in the case of very high concentrations in enclosed places
Sulfur Dioxide	- Aggravation of chronic obstruction lung disease - Increased risk of acute and chronic respiratory illness
Nitrogen Dioxide	- Risk of acute and chronic respiratory disease
Suspended Particulates	- Increased risk of chronic respiratory disease with long exposure - Altered lung function in children - With SO_2, may produce acute illness - Particulate matter, 10 microns or less in size (PM_{10}) may lodge in and/or irritate the lungs

On the basis of monitoring data from this and other stations in the Bay Area, the California Air Resources Board (CARB) has designated the Bay Area a non-attainment area with respect to the national ozone and CO standards.

Regionally, the most severe and complex air quality problem is the relatively high level of ambient ozone experienced during warm, meteorologically stable periods in the summer and autumn. Ozone is not emitted directly from pollutant sources but forms in the atmosphere through a complex series of photochemical reactions involving reactive organic compounds (ROG) and nitrogen oxides (NO_x). No single source category accounts for a majority of the ROG and NO_x emissions, and the many sources are spread throughout the Bay Area air basin. Although the Bay Area's highest ozone levels can fluctuate from year to year, standards are exceeded most often in the Santa Clara, Livermore, and Diablo valleys. Although the ozone problem in the western Alameda County is less severe than in the above-mentioned areas, ROG and NO_x emissions from the Oakland area are carried by the prevailing winds to the east and south where they aggravate the chronic ozone problem of those areas.

In contrast to ozone, CO is a sub-regional problem in the Bay Area. CO is a non-reactive pollutant with one major source: motor vehicles. Ambient CO distributions closely follow the spatial and temporal distributions of vehicular traffic, and are strongly influenced by meteorological factors such as wind speed and atmospheric stability. The federal and State eight-hour CO standards are occasionally exceeded in those parts of the Bay Area subject to a combination of high traffic volumes and frequent atmospheric inversions during the winter months (i.e., northern Santa Clara, western Alameda, and southwestern Solano Counties).[2] Violations of the eight-hour CO standard have been measured in downtown Oakland by BAAQMD mobile monitoring equipment.

Levels of TSP in the Bay Area typically show a pattern of low values near the coast. They increase with distance inland and reach their highest levels in dry, sheltered valleys, such as the Santa Clara, Diablo, and Livermore Valleys. The federal standard for 24-hour average concentrations is occasionally exceeded in many Bay Area communities. The most important particulate sources in the Bay Area are demolition and construction activity, and motor vehicle travel over paved and unpaved roads.

The major sources of NO_x, compounds which have an important role in the formation of ozone, are vehicular, residential, and commercial fuel combustion. Concentrations of NO_2, the most abundant form of ambient NO_x, are highest in the South Bay (where the standard was last exceeded in 1980 at the San Jose monitoring station), although a secondary peak is centered on the Livermore valley. The NO_2 standard has not been exceeded anywhere in the Bay Area since 1980.

The burning of high sulfur fuels for activities such as electricity generation, petroleum refining, and shipping are the major sources of ambient SO_2. The highest levels of SO_2 are recorded by monitoring stations located in a relatively narrow crescent centered on the bayshore of northern Contra Costa County, where the major sources are located. Bay Area seasonal maximums, however, rarely exceed 50% of the standard and SO_2 levels at most Bay Area monitoring stations are less than 10% of the standard. The SO_2 standard is currently being met throughout the Bay Area.

To deal with violations of CO and ozone standards in the region, the BAAQMD, the Association of Bay Area Governments (ABAG), and the Metropolitan Transportation Commission (MTC) authored the 1982 Bay Area Air Quality Maintenance Plan (AQMP). The AQMP called for the imposition of additional controls on stationary and mobile sources of ROG and CO, and set forth a schedule for adopting and implementing these controls. The AQMP projected attainment of national ambient standards for CO and ozone by 1987 and their maintenance below the standards through the year 2000. The key CO and ozone strategies in the AQMP include a motor vehicle inspection/maintenance (I&M) program. In 1984, the State of California adopted a mandatory I&M program that was expected to reduce vehicular emissions of CO in the Bay Area by 16%. No additional control measures were recommended for TSP control. This problem is difficult to control with currently available methods, and the BAAQMD only recommended further research on the problem.

1987 monitoring data, recently made available by the BAAQMD, shows that occasional violations of the Federal ozone and eight-hour CO standards (i.e., 14 days over the standard for ozone, and 1 day over the standard for CO) are still being measured in the Bay Area. As a result of these measurements, the BAAQMD will not be able to declare regional attainment of the ozone standard, but the Bay Area has technically become an

TABLE 4.8-3

OAKLAND AIR POLLUTANT SUMMARY 1982-1986

Pollutant	Standard	1983	1984	1985	1986	1987
OZONE (ppm)						
Highest 1-hour average	0.12	0.07	0.12	0.11	0.12	0.09
Days > fed. std. (0.12)		0	0	0	0	0
CARBON MONOXIDE (ppm)						
Highest 8-hour average	0.9	7.5	7.3	8.0	5.8	4.9
Days ≥ fed./state std.		0	0	0	0	0
NITROGEN DIOXIDE (ppm)						
Highest 1-hour average	0.25	NM	NM	NM	NM	NM
Days ≥ state standard						
SULFUR DIOXIDE (ppm)						
Highest 24-hour average	0.05	NM	NM	NM	NM	NM
Days ≥ state standard						
SUSPENDED PARTICULATES (ug/m^3)						
Annual geometric mean	60	NM	NM	NM	NM	NM

ppm = parts per million
ug/m^3 = micrograms per cubic meter
NM = not monitored

Source: BAAQMD, Air Currents, March issues, 1982-1986.

attainment area for CO because one vio ation per year is allowable under Federal guidelines. Official certification of the Bay Area as a CO attainment area will not mean that this air quality problem has been overcome. Weather conditions last winter were not favorable to the formation of inversions which limit the dispersion of CO. The occurrence of more severe inversion conditions in succeeding winters could cause further violations of the eight-hour CO standard to be recorded at BAAQMD street-level CO monitors in San Francisco and San Jose, and at other locations where traffic is heavy.

Because of the ozone standard violations, the BAAQMD will have to propose and implement additional ozone control strategies and estimate a new attainment date in order to satisfy the EPA. Otherwise, the federal government could impose a funding moratorium on the construction of highway improvements and major stationary sources of air pollutants.

4.8.2 IMPACTS

Motor vehicles would be the major source of additional air pollutants, but emissions from equipment used during project construction would also contribute to the total.

Air quality impacts comprise two categories: temporary impacts due to project construction and long-term impacts due to project operation. In addition, such impacts can be identified as having effects on regional or local scales.

Construction Impacts

Local and Regional Effects. Construction activities would temporarily increase particulate concentrations near the project site. Equipment and vehicles generate dust during clearing, excavation and grading. Construction vehicle traffic on unpaved surfaces also generates dust, as would wind blowing over exposed earth.

It is not possible to estimate accurately the particulate concentrations that would occur at or adjacent to the construction sites because such concentrations are very sensitive to local meteorology and topography and to variations in soil silt and moisture content. However, measurements taken during apartment and shopping center construction in the southwestern United States provide a rough indication of the amount of particulate

emissions expected. These measurements indicate that approximately 1.2 tons of dust are emitted per acre per month of construction activity.[3] Much of this dust is comprised of large particles (i.e., diameter greater than 10 microns) which settle out rapidly on nearby horizontal surfaces and are easily filtered by human breathing passages. Most of the dust generated by construction is, therefore, of concern more as a soiling nuisance rather than for its unhealthful impacts. The remaining fraction of small particulates (i.e., diameter less than 10 microns, termed PM10) might be sufficient to violate the federal and State 24-hour average PM10 standard in the vicinity of construction. Unless mitigation measures were implemented, elevated levels of PM10 would remain as long as construction continues.

Construction vehicles/equipment and worker commute vehicles would emit exhaust at the construction sites thereby contributing to the regional pollutant totals. Because vehicle/ equipment emissions would be relatively small in comparison to operational emissions, they would not be significant on the regional scale, but spot violations of the CO standards may occur in the vicinity of heavy equipment use. Odors of construction equipment exhaust would probably be noticeable in the environs of the project site for the duration of construction.

Operational Impacts

Regional Effects. Once the project is complete, emissions from vehicles associated with project operation would contribute to the regional air pollutant totals. The traffic-related air pollutant emissions would be as shown in Table 4.8-4. The BAAQMD has established emission levels above which air pollutant impacts for any project are considered significant. For projects that generate most of their air pollutants from vehicular sources, project emissions greater than 1% of the total County motor vehicles emissions are considered significant. Alameda County's motor vehicle emissions of CO, ROG, and NO_x for 1983 (the most recent inventory available from the BAAQMD) are 534.3 tons/day, 70.3 tons/day, and 67.5 tons/day, respectively. The project would not generate emissions over the BAAQMD significance thresholds.

TABLE 4.8-4

EMISSIONS FROM PROJECT GENERATED TRAFFIC (TONS/DAY)

Pollutant	Project[1]	Countywide Vehicular Emissions[2]	Bay Area Air Basin Total[3]
Carbon Monoxide	0.117	534.3	2,190
Reactive Organics	0.007	70.3	511
Nitrogen Oxides	0.010	67.5	456

[1] Project emissions were calculated by using the California Air Resources Board URBEMIS2 model. An average vehicle speed of 35 mph, and ambient temperatures of 75°F for CO, ROG, and NO_x were assumed.

[2] Countywide vehicular emissions were taken from Base Year 1983 Emissions Inventory Summary Report, BAAQMD, August 1987.

[3] The regional totals given here are BAAQMD estimates for the year 1990. Estimates were taken from Air Quality and Urban Development, Table VI-A-2.

Local Effects. The project would effect air quality on the local scale, especially CO levels near heavily traveled roadways. Future CO concentrations were obtained by separately estimating the expected changes in background and local CO components. Both components were calculated by following procedures outlined in the BAAQMD's Air Quality and Urban Development. The components were then added to obtain the total CO concentration. Table 4.8-5 shows the worst-case curbside CO concentrations at the two intersections where project traffic is expected to have the greatest impact. No existing or future violations of CO standards is projected.

4.8.3 MITIGATION MEASURES

Dust emissions related to construction can be reduced approximately 50% by watering exposed earth surfaces during excavation, grading and construction activities. All construction contracts should require watering in late morning and at the end of the day; the frequency of watering should increase if wind speeds exceed 15 mph. Conditions of

TABLE 4.8-5

WORST CASE CURBSIDE CARBON MONOXIDE CONCENTRATIONS AT SELECTED LOCATIONS IN THE PROJECT VICINITY (PPM)[1]

Location	Averaging Time	Existing 1988	Without Project 1990	With Project 1990
17th/Jackson	1-hr.	9.4	9.2	9.2
	8-hr.	7.0	6.9	6.9
14th/Jackson	1-hr.	10.4	10.1	10.1
	8-hr.	7.7	7.4	7.4
Background	1-hr.	8.0	8.0	8.0
	8-hr.	6.0	6.0	6.0

[1] The tabulated concentrations are the sums of a background component, which includes the cumulative effects of all CO sources in the project vicinity, and a local component, which reflects the effects of vehicular traffic on roadways. Background and local components were obtained by using procedures outlined in Air Quality and Urban Development, BAAQMD, November 1985. Traffic data was provided by Thompson & Associates.

approval should also require daily cleanup of mud and dust carried onto street surfaces by construction vehicles. Throughout excavation activity, haul trucks should use tarpaulins or other effective covers. Upon completion of construction, contractors should take measures to reduce wind erosion. Replanting and repaving should be completed as soon as possible.

1 Acceptable concentration levels for some pollutants are chosen after careful review of available data on health effects. Pollutants subject to federal ambient standards are sometimes referred to as criteria pollutants because the EPA publishes criteria documents to justify the choice of standards.

[2] An inversion is a condition under which warm air aloft limits upward movement of pollutants contained in a colder layer of air near the surface.

[3]U.S. Environmental Protection Agency, Compilation of Air Pollutant Emission Factors, AP-42, Third Edition, October 1980.

[4]BAAQMD, Air Quality and Urban Development, November 1985, Table VIII-A-1, p. VIII-2.

4.9 WIND

4.9.1 SETTING

The study was conducted in the Boundary Layer Wind Tunnel at the Department of Architecture, University of California, Berkeley. The interior dimensions of the wind tunnel duct are five feet high, seven feet wide and 45 feet long. The test area is 36 feet downwind of the inlet, with the fan downwind of the test area. Figure 4.9-1 is a diagram of the U.C. Berkeley wind tunnel.

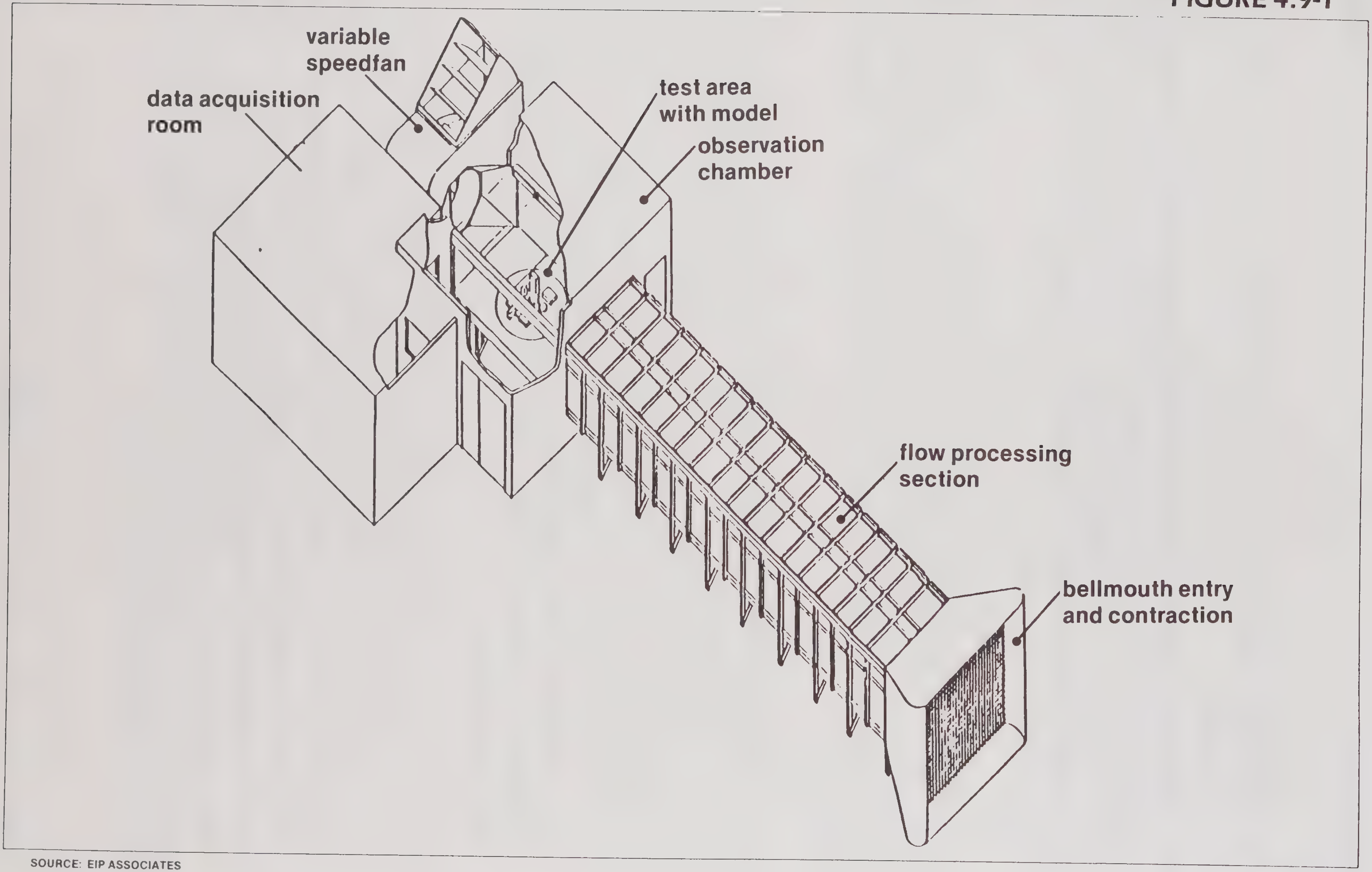
Tests were performed on a 1 inch = 30 feet scale model of the project site and surrounding several blocks. Simulation of the boundary layer in the natural wind is achieved by turbulence generators placed upwind of the test section. This allows for adjustment in the wind characteristics to provide for different model scales and varying terrain upwind of the project.

The velocity measurements in this study were made with a TSI model 1266 and model TSI 1210-20 hot wire anemometers. Prior to commencement of the experiments, both the probes were calibrated. Subsequent side-by-side comparisons between the two probes indicated agreement to within 5%. Thirty sidewalk level velocity measurement locations were selected for this study. Another 15 measurements were made within the project grounds. For the measurement locations within the project boundaries no measurements of the "existing" wind speed were made since these locations would not exist without construction of the project. The model was tested for three directions: west-northwest, west and west-southwest.

Each measurement consisted of simultaneous readings from two anemometer probes, one positioned at the desired pedestrian level location and the other at a stationary reference location 60 centimeters (23.6 inches) above the wind tunnel floor. The axes of the probes were positioned vertically in all cases. The height of the reference sensor was selected to provide a stable characteristic reference velocity away from the influence of the building models and ground-level measurements. During each measurement the two velocity probes were sampled at a rate of ten samples per second for a duration of 30 seconds. The collected data were analyzed to produce the quantities of interest: mean velocity, turbulence intensity, and equivalent wind speed.

BOUNDARY LAYER WIND TUNNEL

FIGURE 4.9-1



SOURCE: EIP ASSOCIATES

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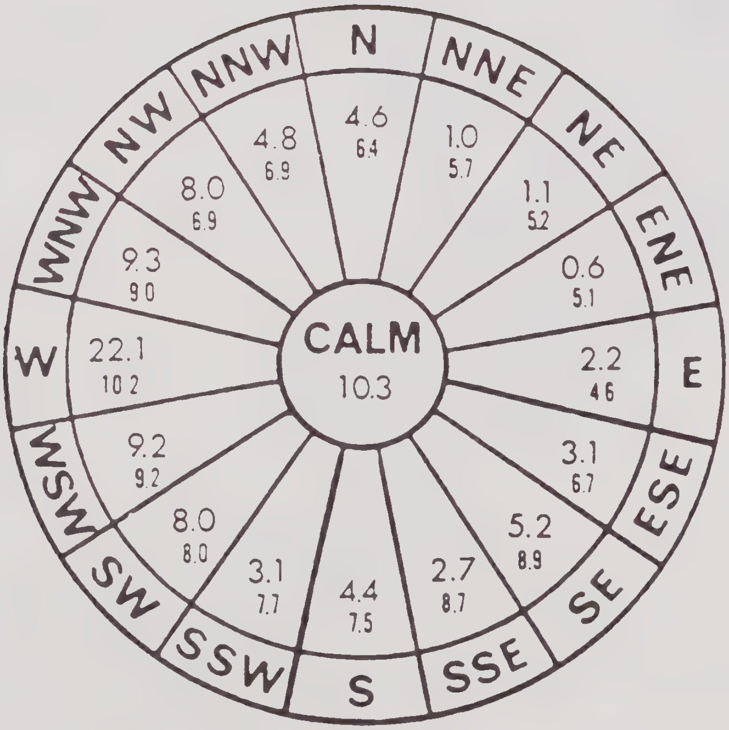
Wind conditions partly determine pedestrian comfort on sidewalks and in other public areas. In downtown areas, highrise buildings can redirect wind flows around buildings and divert winds downward to street level; each can result in increased wind speed and turbulence at street level.

Pedestrian comfort varies under different conditions of sun exposure, temperature, clothing, and wind speed. Winds up to four MPH have no noticeable effect on pedestrian comfort. Winds from four to eight MPH are felt on the face. Winds from eight to 13 MPH will disturb hair, cause clothing to flap, and extend a light flag mounted on a pole. Winds from 19 to 26 MPH are felt on the body. At 26 MPH to 34 MPH wind, umbrellas are used with difficulty, hair is blown straight, there is difficulty in walking steadily, and wind noise is unpleasant. Winds over 34 MPH increase difficulty with balance and gusts can blow people over. The City of Oakland has not established wind acceptability criteria. San Francisco, however, has established wind criteria for downtown areas. The City of San Francisco Planning Code establishes an equivalent wind speed (including the effects of turbulence) of seven and 11 MPH as comfort criteria. This code sets comfort levels of seven MPH equivalent wind speed for public seating areas and 11 MPH equivalent wind speed for areas of substantial pedestrian use.

The closest long-term wind measuring site to the proposed project site is Alameda Naval Air Station. A wind rose for this location is shown in Figure 4.9-2. It can be seen that the three wind directions tested (west-southwest, west, west-northwest) with calm conditions occur 51% of the time. More importantly, winds from these directions are the strongest, on average.

The San Francisco wind code was used as a guide to determine the acceptability of the measured wind conditions around the project site. This code is based on wind acceptability criteria defined in terms of "equivalent wind speed" (EWS). EWS denotes the mean hourly wind speed adjusted to account for the expected turbulence intensity or gustiness at the site. The wind speed limits in the code were developed with an inherent turbulence intensity of 15%. When the measured turbulence intensity at a point is greater than 15%, the equivalent wind speed is calculated by multiplying the mean velocity at the point by a weighting factor according to the following formula:

WIND DIRECTION FREQUENCY DISTRIBUTION
AND MEAN WIND SPEED, ALAMEDA NAVAL AIR STATION FIGURE 4.9-2



percentage distribution of wind directions
with mean wind speed beneath

SOURCE: EIP ASSOCIATES

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eip

EWS = Vm (2*TI + 0.7) where:

Vm = mean pedestrian-level wind speed; TI = turbulence intensity

For measured turbulence intensities less than 15%, EWS is taken to be equal to Vm.

Wind speed data representative of Oakland and vicinity is available from the weather station located at 6.7 meters (22 feet) above ground at the Alameda Naval Air Station. The collected wind tunnel data has been analyzed to produce an empirical relationship between the equivalent wind speed at each selected pedestrian-level location and the mean wind speed at the weather station. Tables 4.9-1 through 4.9-3 show the resulting estimated mean wind speeds at each of the measurement locations. Figure 4.9-3 shows the location of the measurement points.

Separate wind tunnel tests were conducted for two separate cases: existing and after completion of the proposed project. To simplify the wind tunnel analysis, the results of the wind tunnel tests for the 30 sidewalk locations have been summarized in Table 4.9-4. The number of measurement locations having increased, decreased and unchanged average wind speeds is shown, together with the maximum measured wind speed. In all cases, changes are relative to the existing measured wind speed. The frequency that winds would exceed the San Francisco wind criteria has been calculated for each measurement point in Table 4.9-5. For points 1 through 35, the 11 MPH pedestrian area criterion would apply; for points 36 through 44, the seven MPH sitting area criterion has been used. The San Francisco Wind Code specifies that the wind criteria should not be exceeded more than 10% of the time, but does recognize that existing conditions in some areas of San Francisco already exceed this level. This arbitrary threshold should not be applied to Oakland, where warmer temperatures and more frequent sunshine make wind a less important factor in determining comfort.

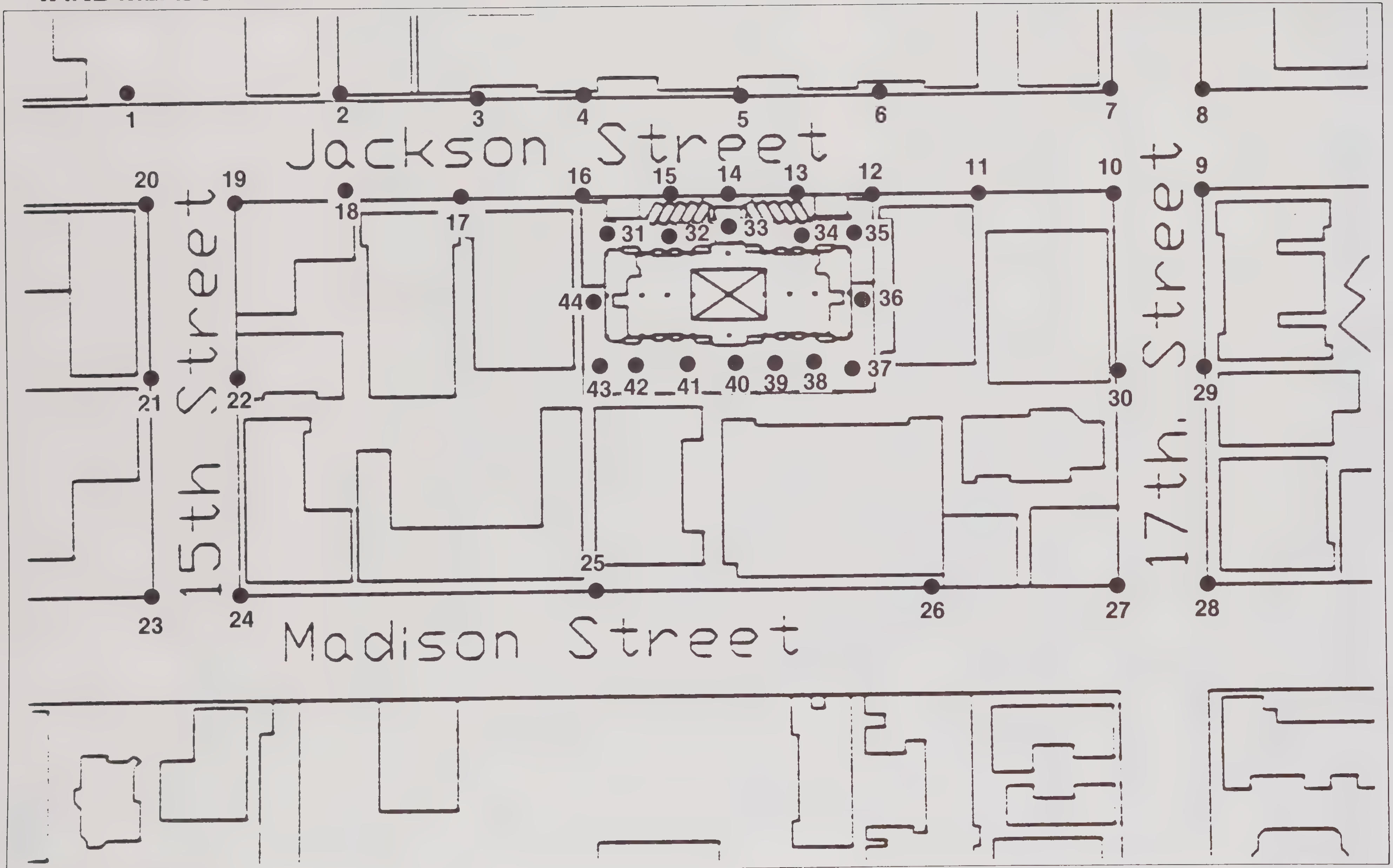
4.9.2 IMPACTS

<u>Sidewalk Areas (Measurement Locations 1 Through 30)</u>

Table 4.9-4 shows that the effect of the project on sidewalk areas will vary with location (locations 1-30).

WIND MEASUREMENT LOCATIONS

FIGURE 4.9-3



SOURCE: EIP ASSOCIATES

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TABLE 4.9-1

PREDICTED MEAN WINDSPEEDS FOR WEST-NORTHWEST WINDS

Location	Existing	Project
1	2.8	2.8
2	3.5	5.5
3	1.6	7.0
4	1.4	5.7
5	1.6	3.2
7	6.2	5.7
8	7.9	8.0
9	7.9	7.8
10	5.8	5.9
11	3.2	8.6
12	4.4	8.3
13	3.9	6.8
14	2.9	4.3
15	2.6	6.7
16	2.8	9.0
17	3.4	5.4
18	3.0	3.4
19	3.7	5.0
20	4.2	4.3
21	2.7	2.8
22	2.8	4.3
23	3.8	4.9
24	2.9	4.4
25	2.6	3.9
26	3.9	4.4
27	3.2	4.5
28	6.5	6.4
29	5.5	6.4
30	5.6	6.3
31	--	5.7
32	--	5.1
33	--	3.0
34	--	5.8
35	--	7.5
36	--	7.9
37	--	8.3
38	--	3.0
39	--	3.2
40	--	3.0
41	--	3.5
42	--	2.6
43	--	9.0
44	--	9.6

TABLE 4.9-2

PREDICTED MEAN WINDSPEEDS FOR WEST WINDS

Location	Existing	Project
1	3.9	3.5
2	4.2	3.2
3	3.5	7.3
4	3.4	5.3
5	3.2	4.3
6	2.4	6.8
7	7.4	7.1
8	10.6	10.5
9	10.0	10.4
10	5.8	5.4
11	3.2	9.7
12	3.6	9.2
13	3.8	7.4
14	4.0	4.7
15	4.5	6.7
16	5.1	9.0
17	5.7	4.9
18	5.0	3.6
19	3.6	4.1
20	6.2	6.5
21	4.0	4.5
22	4.0	4.6
23	4.8	4.9
24	5.8	6.1
25	2.7	4.6
26	5.4	5.9
27	3.8	3.3
28	7.9	7.9
29	6.8	7.1
30	5.4	3.6
31	---	3.3
32	---	4.8
33	---	5.2
34	---	7.2
35	---	8.3
36	---	5.5
37	---	7.4
38	---	5.2
39	---	6.0
40	---	5.9
41	---	4.9
42	---	3.5
43	---	9.9
44	---	9.9

TABLE 4.9-3

PREDICTED MEAN WINDSPEEDS FOR WEST-SOUTHWEST WINDS

Location	Existing	Project
1	4.8	4.1
2	4.6	2.9
3	5.0	3.1
4	4.7	3.1
5	4.3	5.5
6	4.0	6.3
7	7.3	6.8
8	9.3	9.2
9	8.9	9.1
10	4.7	8.0
11	3.7	10.5
12	5.2	10.1
13	6.4	8.3
14	6.8	7.2
15	7.3	4.3
16	7.2	5.6
17	6.7	6.0
18	4.5	4.1
19	5.3	4.5
20	7.6	7.6
21	4.4	3.9
22	5.0	5.0
23	4.5	4.8
24	5.6	6.4
25	2.9	2.0
26	4.1	4.7
27	5.0	3.0
28	7.4	7.7
29	5.4	5.9
30	3.9	3.3
31	---	3.1
32	---	4.1
33	---	8.3
34	---	8.6
35	---	8.9
36	---	3.1
37	---	4.3
38	---	6.0
39	---	8.0
40	---	7.3
41	---	6.0
42	---	4.8
43	---	9.5
44	---	8.3

TABLE 4.9-4

SUMMARY OF PROJECT WIND IMPACTS

Wind Direction	WNW	W	WSW
No. Points Increased	25	20	13
No. Points Decreased	4	9	15
No. Points Unchanged	1	1	2
Highest	9.6	10.5	10.5
Existing Highest	7.9	10.6	9.3

Windspeed with the project would generally be increased by the project, particularly along the east side of Jackson Street adjacent to the project (locations 12 through 16). Overall, the range of wind speeds would be similar to existing conditions, and the wind environment near the project site would be very similar to existing conditions after construction.

Table 4.9-5 shows that at these sidewalk locations wind would exceed the 11 MPH comfort criterion by from 0 to 13% of the time for existing conditions. With the completed project, the range would be from 0 to 14% of the time.

Interior Areas (Measurement Locations 31 Through 44)

The ground level areas within the project would exceed the 11 MPH comfort criterion by from 0 to 10% of the time. Within the recreational terrace surrounding three sides of the project tower, the seven MPH criterion for sitting areas would be exceeded up to 25% of the time. The south side of the terrace would be most affected by wind, while the north end would be less affected.

TABLE 4.9-5

PERCENT OF TIME WIND EXCEEDS COMFORT CRITERIA

Location	Existing (%)	Project (%)
1	0	0
2	0	0
3	0	5
4	0	0
5	0	0
6	0	3
7	6	3
8	13	14
9	12	13
10	1	1
11	0	14
12	0	13
13	0	7
14	0	1
15	1	3
16	1	10
17	0	0
18	0	0
19	0	0
20	2	3
21	0	0
22	0	0
23	0	0
24	1	1
25	0	0
26	0	1
27	0	0
28	8	8
29	3	4
30	0	1
31	---	0
32	---	0
33	---	2
34	---	5
35	---	10
36	---	10
37	---	15
38	---	9
39	---	14
40	---	12
41	---	8
42	---	2
43	---	25
44	---	24

4.9.3 MITIGATION MEASURES

For street level winds, the project generally would have little impact, except on sidewalk areas adjacent to the project. These areas would be made more comfortable with the planting of large-sized street trees.

Predicted winds within the outdoor recreation terrace do exceed the comfort criterion for sitting areas a significant percentage of time. The model of the project did not include any landscaping, fences or other features within the terrace that may affect wind velocities. Winds at this level would be less than predicted because of these factors. It is recommended, however, that the layout, perimeter fencing, landscaping and other features included on the terraces should be designed to provide wind shelter from winds in areas where wind-sensitive activities (sitting, eating, etc.) would be located.

4.10 NOISE

4.10.1 SETTING

Acoustic Fundamentals

Sound is a mechanical form of radiant energy which is transmitted by pressure waves in the air. It is characterized by two parameters: amplitude and frequency.

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic rather than a linear scale. As a consequence, the pressure difference in a 10 dB sound is 10 times that of a 0 dB sound, a 20 dB sound is 100 times the pressure difference, a 30 dB sound 1000 times, and so on. Another feature of the decibel scale is the way in which sound amplitudes from multiple sources add. A 65 dB point source of sound, say a truck, when joined by another similar source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish 2 dB change in amplitude as the minimum audible difference for the average person.

Frequency is the number of fluctuations of the pressure wave per second. The unit of frequency is the Hertz (abbreviated Hz; one Hz equals one cycle per second). The human ear is not equally sensitive to sound of different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA.

Noise is unwanted and disturbing sound. The human response to environmental noise is subjective and varies considerably from individual to individual. The effects of noise can range from interference with sleep, concentration, and communication, to the causation of physiological and psychological stress, and, at the highest intensity levels, to hearing loss. Sleep disturbance occurs when interior noise levels exceed 40 to 50 dBA. The passage of a heavy truck can generate sound in excess of 90 dBA. Jet takeoffs at 200 feet amount to about 120 dBA.

Environmental noise fluctuates in intensity over time and several descriptors of time-averaged noise levels are in use. Three most commonly used are Leq, Ldn, and CNEL. Leq, the energy equivalent noise level, is a measure of the average energy content (intensity) of noise over any given period of time. Ldn, the day-night average noise level, is the 24-hour average of the noise intensity, with a 10 dBA "penalty" added for nighttime noise (10:00 pm to 7:00 am) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to Ldn, but adds a 5 dBA penalty to evening noise (7:00 pm to 10:00 pm). In situations where vehicles are the dominant source of noise, Leq for the peak commute hour, Ldn and CNEL of the same noise source usually differ by less than 2 dBA.

Regulatory Background

The applicable policies and standards governing environmental noise in Alameda County are set forth in the Noise Element of the County General Plan. Alameda County employs a Land Use Compatibility Table from the General Plan (see Table 4.10-1 below) as a guide for making decisions on prospective land uses in relation to noise sources and to determine noise mitigation needs.

4.10.2 IMPACTS

Construction Noise

Construction activities would temporarily generate high noise levels on and around the site over the entire period of project construction. Table 4.10-2 shows outdoor noise levels likely to be experienced during construction phases. Since noise from localized sources typically falls off by about 6 dBA with each doubling of distance from source to receptor, receptors located within about 1400 feet of construction would experience noise greater than 60 dBA during the noisiest phases of construction. Noise abatement provided by walls, windows, and doors of nearby buildings would reduce indoor noise levels by 20 to 50 dBA, depending on such factors as the material composition of the wall, wall/window area ratio, etc. Construction noise would disturb the concentration and communication of people near the construction site and may disrupt activities inside nearby buildings.

TABLE 4.10-1

ALAMEDA COUNTY OUTDOOR NOISE COMPATIBILITY GUIDELINES

Land Use Category	Community Noise Exposure CNEL, dBA								
	50	55	60	65	70	75	80	85	90
Residential/Educational	a	a	a	b	c	c	c	c	c
Commercial	a	a	a	a	b	b	c	c	c
Industrial	a	a	a	a	a	b	b	c	c
Agricultural/Open Space	a	a	a	a	b	b	b	b	b

KEY: a - Little Impact
b - Moderate Impact
c - Significant Impact

Source: Noise Element, Alameda County General Plan

TABLE 4.10-2

TYPICAL CONSTRUCTION NOISE LEVELS AT 50 FEET (dBA)[1]

Construction Phase	Commercial/Industrial Construction Average Noise Level	Housing Construction Average Noise Level
Groundclearing	84	84
Excavation	89	88
Foundations	78	81
Erection	85	82
Finishing	89	88

[1]Taken from Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, prepared by Bolt, Beranek, and Newman for the U.S. Environmental Protection Agency, December 31, 1971, p. 20.

TABLE 4.10-3

ESTIMATED VEHICULAR TRAFFIC NOISE LEVELS ALONG SELECTED ROADWAYS IN THE PROJECT VICINITY (in dBA)[1]

	Existing 1987		Baseline 1990		With Project 1990	
Roadway	Peak Leq	Ldn	Peak Leq	Ldn	Peak Leq	Ldn
Jackson Street	68	66	68	66	68	66
14th Street	69	67	69	67	69	67

[1]Estimates based on FHWA Highway Traffic Noise Prediction Model, U.S. Department of Transportation, December 1978.

Operational Noise

The effect of the project on the noise environment in its vicinity would be produced by the increases in vehicular traffic on roadways in the area. Table 4.10-3, as shown above, compares estimates of existing noise levels with projections of future noise levels with and without the project. The increase in noise due to the project would be less than 1 dBA, an amount that is barely noticeable to most people.

4.10.3 MITIGATION MEASURES

Construction work should be limited to daylight hours, and all equipment and operations with a high noise potential should be muffled or controlled to the degree shown in Table 4.10-4.

TABLE 4.10-4

TYPICAL CONSTRUCTION EQUIPMENT NOISE (dBA)[1]

Equipment Type	Noise Level at 50 Feet: Without Noise Control	Noise Level at 50 Feet: With Feasible Noise Control[2]
Earthmoving:		
Front Loaders	79	75
Backhoes	85	75
Dozers	80	75
Tractors	80	75
Scrapers	88	80
Graders	85	75
Trucks	91	75
Pavers	89	80
Materials Handling:		
Concrete Mixers	85	75
Concrete Pumps	82	75
Cranes	83	75
Derricks	88	75
Stationary:		
Pumps	76	75
Generators	78	75
Compressors	81	75
Impact:		
Pile Drivers	101	95
Jack Hammers	88	75
Rock Drills	98	80
Pneumatic Tools	86	80
Other:		
Saws	78	75
Vibrators	76	75

[1] Taken from Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, prepared by Bolt, Beranek, and Newman for the U.S. Environmental Protection Agency, December 31, 1971.

[2] Estimated levels obtainable by selecting quieter procedures or machines and implementing noise control features requiring no major redesign or extreme cost.

4.11 SHADOWS

4.11.1 SETTING

This section analyzes shadow impacts generated by the proposed project on December 21, March 21 and June 21 at 10:00 a.m., 12:00 noon and 3:00 p.m (see Figures 4.11-1 through 4.11-9). The shadow diagrams show project shadow and existing building shadows in the area where the outline of the proposed project shadow would lie. New shadows that would impact the availability of sunlight on public streets surrounding the project and on open space surrounding Lake Merritt are described below.

Solar calculations for the shadow analysis conducted for the project were based on sidereal time computations that take into account the geographic location of the project. Calculations for the shadow projections took into account differences in the topography on the study area. Solar data used to define "apparent right Ascension" and the "apparent declination" of the sun included in the calculations were drawn from the Astronomical Almanac (1985) and were based on information provided for the base year 1985.

The project site is located on the southeast side of Jackson Street between 15th and 17th Streets. The existing building on the site varies in height from 33 feet to 41 feet above the street level. The proposed project would rise to a maximum height of 192 feet above street level with stepbacks along each side of the building. The base of the building would be 20 feet above street level.

The area surrounding the proposed project is urban in character with buildings ranging from 40 to 50 feet. The proposed project would be the tallest building in the immediate vicinity although there are several buildings of comparable height within a few blocks of the site.

The base map and proposed building plans were provided by the project architects. The heights of existing buildings were then calculated by determining the angle of inclination from a given point opposite the building to the top of the parapet. Trigonometric calculations were used to determine the building heights.

4.11.2 IMPACTS

In general, new shadows would be added to Jackson Street in the morning hours year round. Shadows would cover only part of this street by midday in March and part of the adjacent sidewalk in June. The shadows in the later afternoon hours generally fall within existing shadows or on the side and back yards of existing buildings to the east of the project site within the same block that would contain the proposed project.

Shadow Diagrams

December 21

At 10:00 a.m. new shadow would be added to Jackson Street and sidewalks northwest of the project site (Figure 4.11-1).

At 12:00 noon new shadow would be added to Jackson Street north of the project site and to about 60% of the intersection of Jackson Street and 17th Street (Figure 4.11-2).

At 3:00 p.m. a strip of new shadow approximately 15 feet wide would be added to 17th Street (Figure 4.11-3). This new shadow would remove the only remaining sunlit area on this street between Jackson and Madison Streets at this time. New shadow would also be added to a portion of Lakeside Drive but would not extend as far as the open green space which surrounds Lake Merritt.

March 21

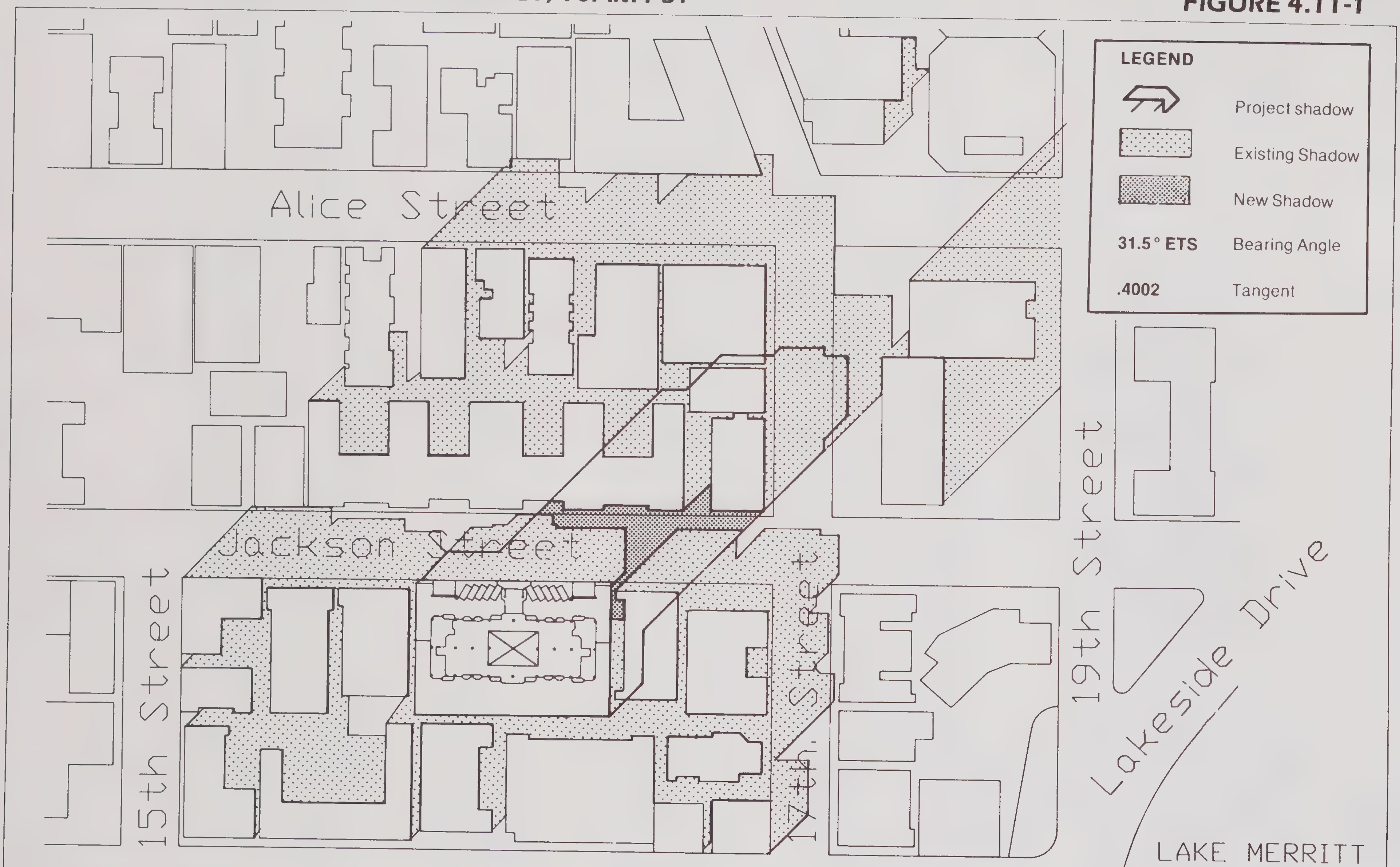
At 10:00 a.m. new shadow would be added to Jackson Street across from and north of the project site (Figure 4.11-4).

At 12:00 noon new shadow would be added to a portion of Jackson Street opposite and north of the project site (Figure 4.11-5). New shadows would not extend across Jackson Street to the far sidewalk at this time.

At 3:00 p.m. new shadows would fall to the northeast across existing buildings and no new shadows would be added to any public street or open space (Figure 4.11-6).

SHADOW DIAGRAM — DECEMBER 21, 10AM PST

FIGURE 4.11-1

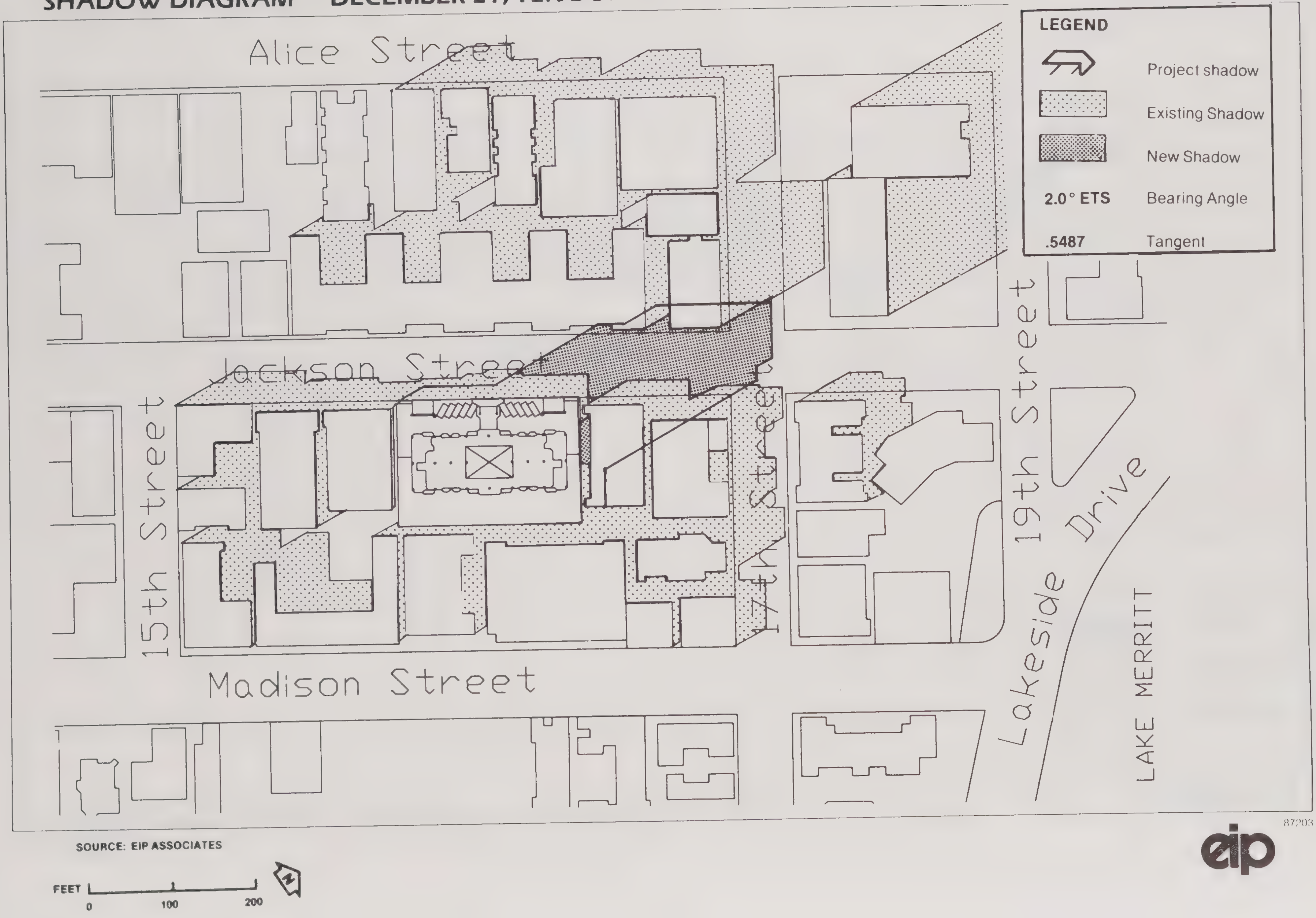


SOURCE: EIP ASSOCIATES

FEET 0 100 200

87203

SHADOW DIAGRAM — DECEMBER 21, 12NOON PST **FIGURE 4.11-2**



SOURCE: EIP ASSOCIATES

SHADOW DIAGRAM — DECEMBER 21, 3PM PST

FIGURE 4.11-3

SOURCE: EIP ASSOCIATES

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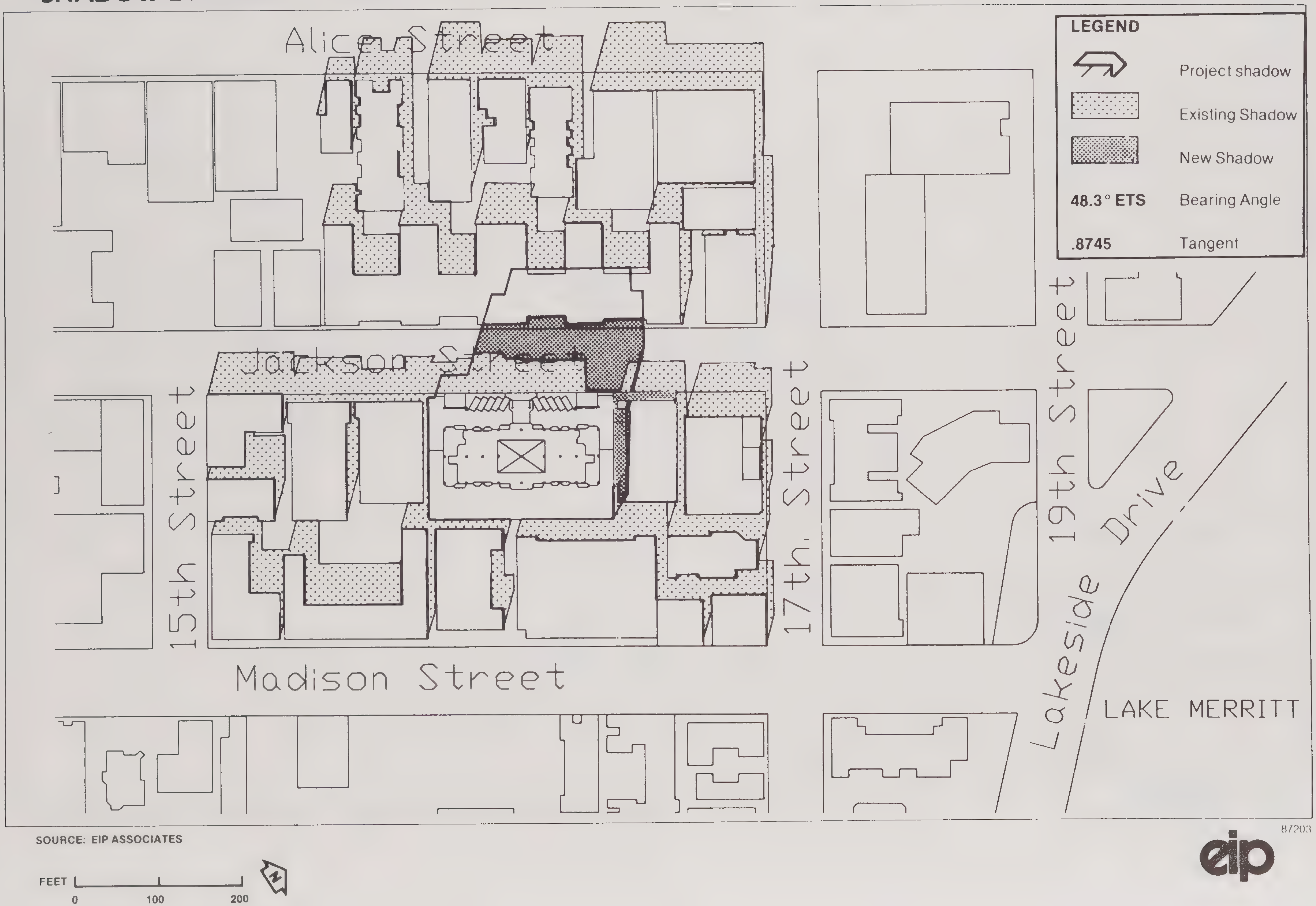
SHADOW DIAGRAM — MARCH 21, 10AM PST

FIGURE 4.11-4



SOURCE: EIP ASSOCIATES

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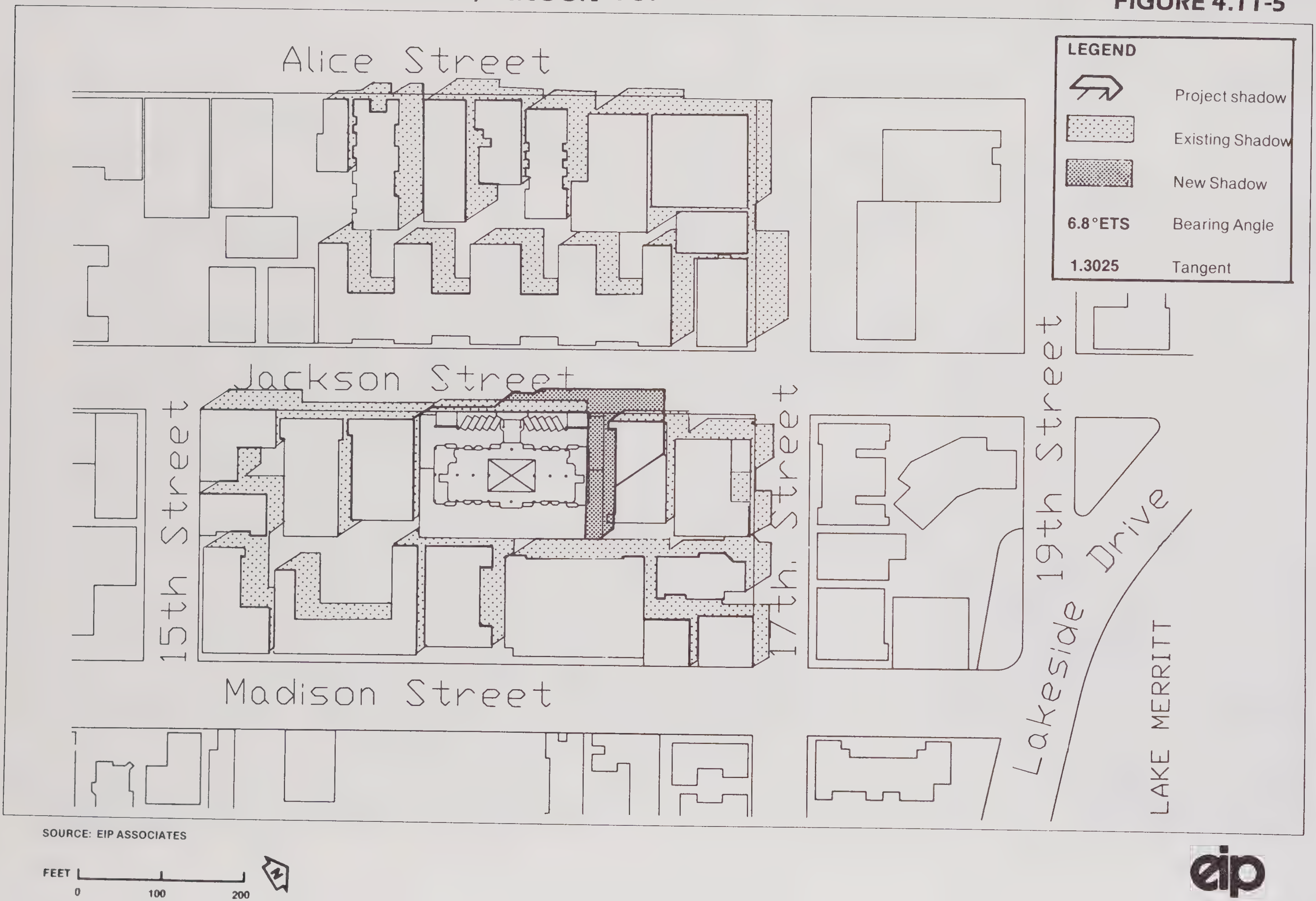
SHADOW DIAGRAM — MARCH 21, 12NOON PST

FIGURE 4.11-5



SOURCE: EIP ASSOCIATES

SHADOW DIAGRAM — MARCH 21, 3PM PST

FIGURE 4.11-6

SOURCE: EIP ASSOCIATES

FEET 0 100 200

87203

June 21

At 10:00 a.m. new shadow would be added to Jackson Street southwest and across from the project site (Figure 4.11-7).

At 12:00 noon a strip of less than ten feet wide of new shadow would be added to a portion of Jackson Street adjacent to the project site (Figure 4.11-8).

At 3:00 P.M. new shadow would not be added to any public street or open space (Figure 4.11-9). Shadows would fall to the northeast across existing structures.

Public Open Space

No public open spaces which would be used for recreation purposes would be impacted by shadows from the proposed project during the hours and dates studied. It is possible that new shadow could be added to a small portion of the open space which surrounds Lake Merritt later than 3 P.M. in the winter months. This area is used by people who run or walk around the lake for exercise and recreation. The extent of new shadows, if any, would fall within the patterns of existing shadow and is not expected to add significant new impacts to the area. Lakeside Drive curves away from the project site at a point near the project and the shadows would likely follow along the curve of the road as they become fully absorbed by the shadow of existing large buildings closer to the Lake.

A review of the shadow diagrams shown in this report suggest there would not be significant impacts on the availability of sunlight to areas of public access. Most of the existing buildings in the area range from 40 to 50 feet above street level and provide a significant amount of existing sunlight on the streets in the area. This condition would be changed to a degree by the development of the proposed structure which would be higher than most surrounding structures. However, as illustrated in the shadow diagrams, shadows would fall on existing adjacent roof tops and built space as well as street space. On one occasion analyzed, shadow from the proposed project would remove a small remaining sunlit area at street level along 17th Street (see Figure 4.11-3).

4.11.3 MITIGATION MEASURES

No mitigation measures are suggested.

SHADOW DIAGRAM — JUNE 21, 10AM PDT

FIGURE 4.11-7

SOURCE: EIP ASSOCIATES

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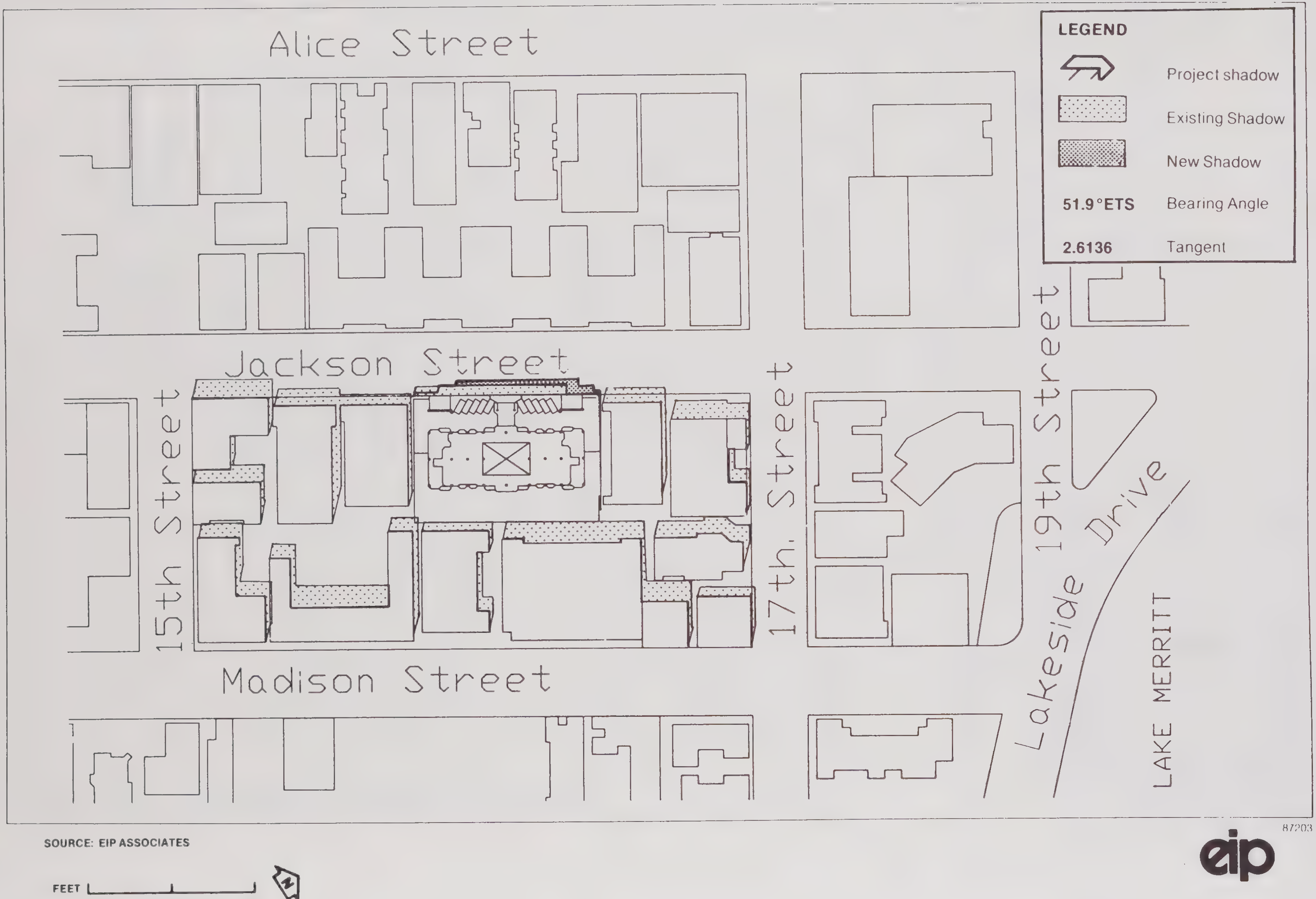
SHADOW DIAGRAM — JUNE 21, 12NOON PDT

FIGURE 4.11-8



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SOURCE: EIP ASSOCIATES

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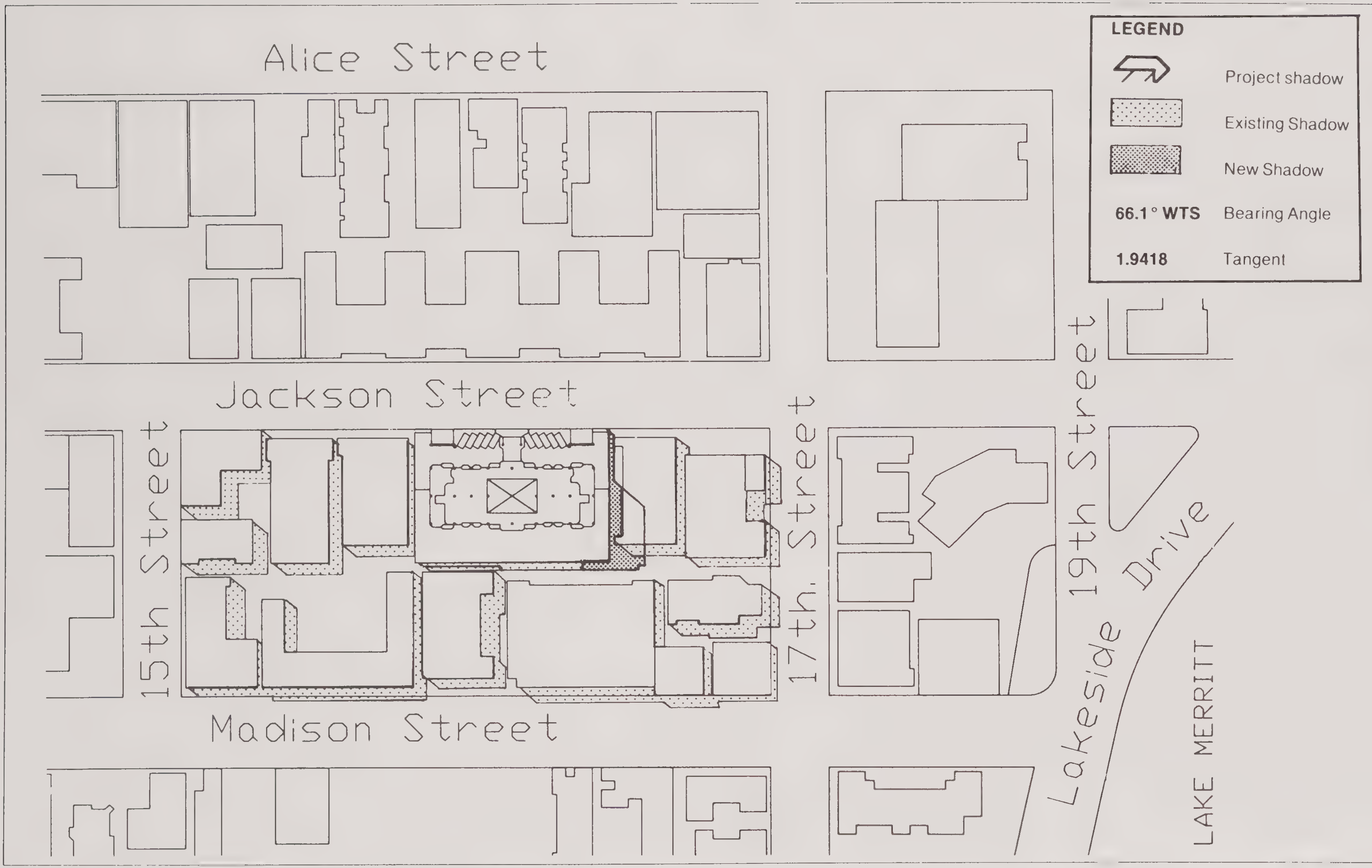
SHADOW DIAGRAM — JUNE 21, 3PM PDT

FIGURE 4.11-9



SOURCE: EIP ASSOCIATES

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5. GROWTH INDUCEMENTS

Construction of new housing near the downtown area would help balance the need generated by the new office growth in this area. Assuming all 345 new residents of the proposed buildings would come from areas outside Oakland, the proposed project could increase the City's population by 287 persons. To the extent that residents would be purchasing goods and services not already being purchased in Oakland, the new residents would directly stimulate some commercial activity.

No additional public facilities or services must be provided to accommodate the project; therefore, no further indirect growth-stimulating effects in connection with the project are foreseen. There would, however, be an increase in purchasing power in Oakland due to new residents over the long-term, and construction personnel over the short-term construction period.

The project could set a precedent for replacing other existing lowrise, residential structures in the area with higher density structures.

6. UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

If the proposed project were fully implemented as proposed, there would be one significant environmental impact. The height of the building on the block face would constitute a significant adverse visual impact when taking into consideration the height and scale of other buildings on this block. This impact could be avoided with a smaller structure (see Alternatives). Mitigation measures for other potential impacts are included in each environmental impact section.

7. ALTERNATIVES TO THE PROPOSED PROJECT

7.1 ALTERNATIVE ONE: NO-BUILD

Under this alternative, the proposed project would not be built. The existing apartment building and parking lot would remain, and no existing tenants would be displaced as a result of the building being removed. The No-Build alternative would have no transportation, wind, shadow, air quality, visual, energy or noise impacts.

This alternative has been rejected by the project sponsor because it would not maximize the economic return for this property.

7.2 ALTERNATIVE TWO: TWIN TOWERS

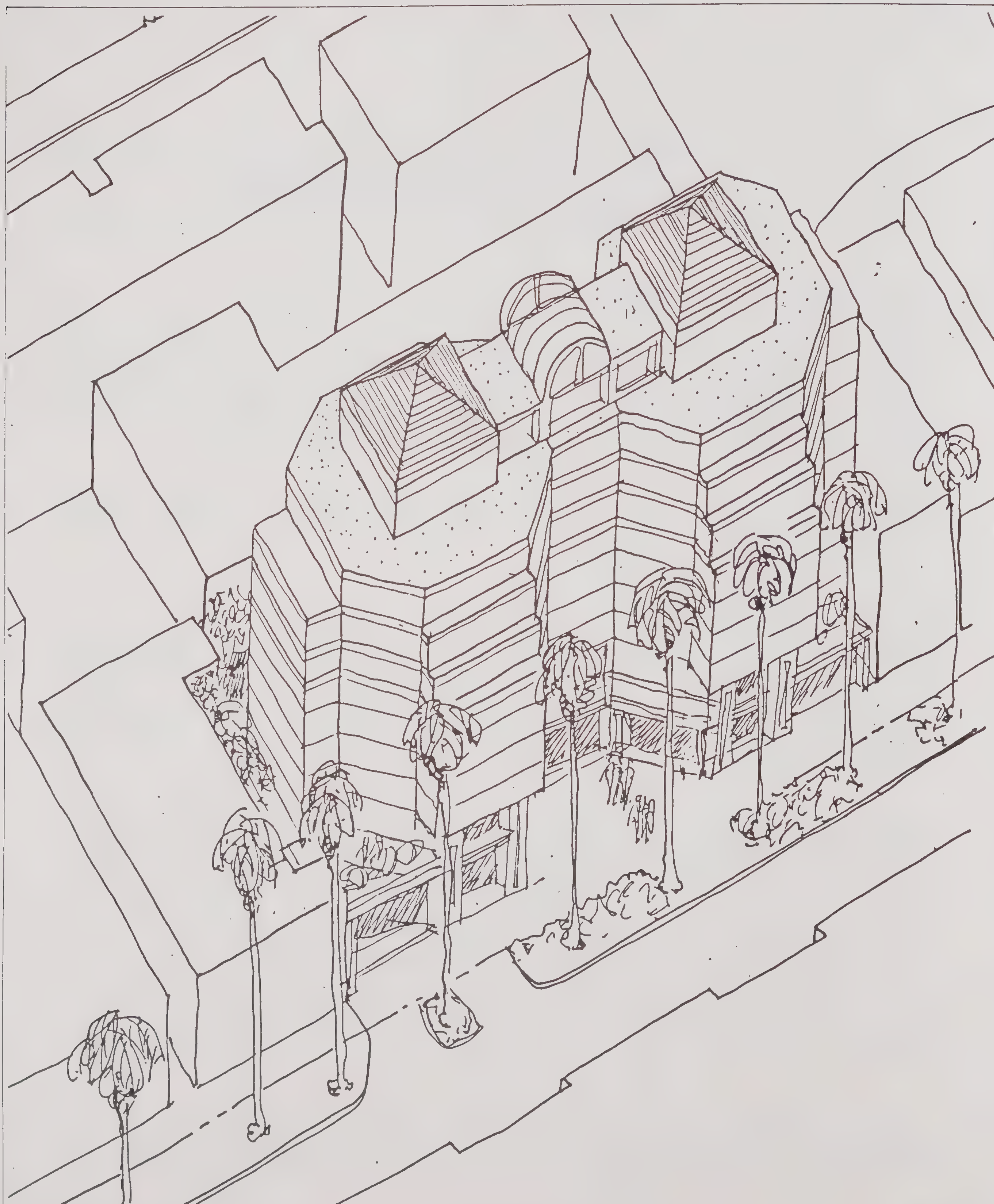
Under this alternative the project would consist of a set of twin towers (see Figures 7-1 through 7-3). This alternative would be ten stories in height (compared to 18 for the proposed project), with three levels of parking below grade. Each tower would be serviced by its own elevator.

Under this alternative, there would be eight floors of residential units, with 16 studios and 16 one-bedroom units on each floor for a total of 256 units. The studios would range in size from 450 to 465 sq.ft. (compared to 460 to 600 sq.ft. in the proposed project); the one-bedroom units would range from 635 to 785 sq.ft. (compared to 570 to 800 sq.ft. in the proposed project). This alternative would contain no two-bedroom units. The first floor would consist of dining and ancillary space; the tenth floor would contain the elevator equipment room. There would be 274 parking stalls included as part of the project.

Wind and shadow impacts and view blockage would be reduced with 10 rather than 18 stories. However, as this alternative contains 18 units more than the proposed project,

ALTERNATIVE TWO: TWIN TOWERS AXONOMETRIC

FIGURE 7-1



SOURCE: SUE ASSOCIATES

NO SCALE

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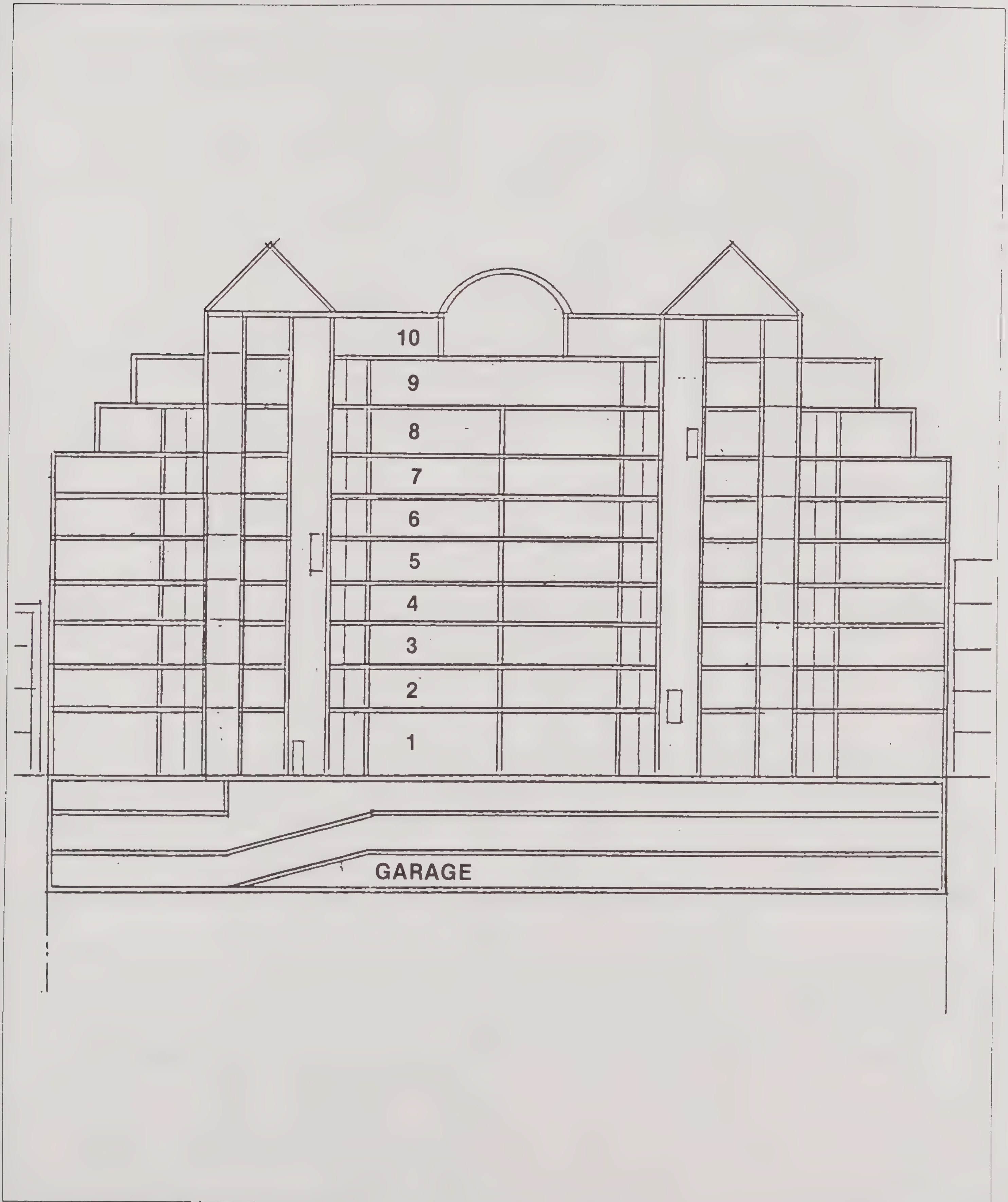
ALTERNATIVE TWO: SECTION

FIGURE 7-2



SOURCE: SUE ASSOCIATES

FEET 0 32 64

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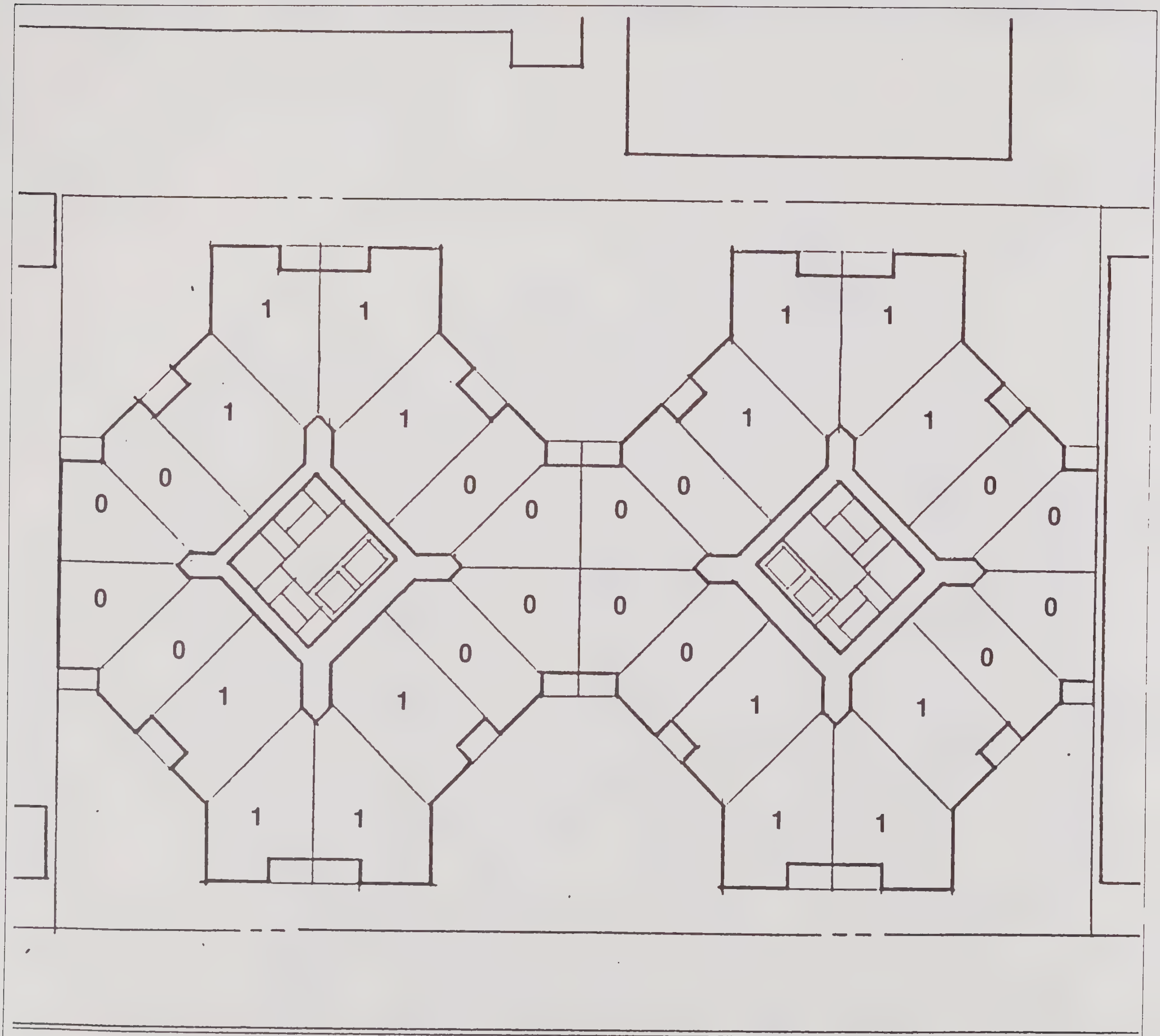
ALTERNATIVE TWO: PLAN, FLOORS TWO-NINE

FIGURE 7-3



0 = Studio

1 = 1 Bedroom

SOURCE: SUE ASSOCIATES

FEET 0 32 64

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total daily vehicle trips would increase by approximately 74 trips. Tenants of the existing structure would still be displaced under this alternative.

Although the height of this building would be less than that of the proposed project, it could appear more massive in scale as its footprint would cover most of the project site. Unlike the proposed project, this alternative would not be set-back 40 feet from the front and back property lines, and would thus have less open space. This alternative would carry through a uniform setback of the facades of buildings already on the block. This alternative would also require exceptions to the Oakland Building Code regarding ingress and egress requirements. The Code requires two exits to be separated by a distance more than half of the diagonal across the length of the building. Both of this alternative's exits are located at the center of the building between the two towers. Stairway towers could also be located at the ends of the building.

The project sponsor has rejected this alternative as it does not meet the sponsor's design and marketing objectives. The greater footprint size of this alternative and mass of the structure do not allow for larger sized units with easy access and expansive views. Moreover the non-compliance with Oakland Building Code is an additional factor that renders this alternative unacceptable to the project sponsor.

7.3 ALTERNATIVE THREE: SCALED-DOWN PROJECT

Under this alternative, the project would consist of a building with the same footprint as that of the proposed project; however, the building would rise to nine stories instead of 18 as proposed. This alternative would contain 119 residential units as compared to 238 in the proposed project. Figure 7-4 outlines the height of Alternative Three as compared to the proposed project.

Impacts as a result of this alternative would be reduced as compared to the proposed project. Visual impacts including view blockage would be reduced with nine rather than 18 stories, as well as energy, wind and shadow impacts. A nine-story building would be closer in scale to existing surrounding structures. Additional traffic in the area would be half of that caused by the proposed project.

PHOTOMONTAGE: HEIGHTS OF PROPOSED PROJECT AND ALTERNATIVE THREE

FIGURE 7-4

SOURCE: SQUARE ONE FILM & VIDEO

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Tenants of the existing structure would still be displaced under this alternative, and the project would provide a net gain of 72 instead of 191 housing units within Oakland's overall housing stock.

This alternative was rejected by the project sponsor as it provides only half of the residential units that the proposed project would provide.

7.4 ALTERNATIVE FOUR: ALTERNATIVE SITE

Under this alternative, a different site would be chosen for the residential complex. A possible alternative site is on the west side of the downtown area, on Castro/Grove, 18th or 17th. Under this alternative, the project would consist of a building of the same dimensions as that of the proposed project. This alternative would contain 238 residential units, as would the proposed project.

Impacts as a result of this alternative would be more or less the same as those of the proposed project. At the possible alternative site on the west side of the downtown area, the project would be more visible, particularly from the Grove-Shafter freeway. This alternative would have closer access to the freeway than the proposed project. There would be less demand for parking because the west side of downtown is a less dense area of Oakland. This proposed alternative site would introduce a greater density of residential use to this area.

The project sponsor has rejected this alternative because it does not meet the objective of providing market rate housing in an established residential neighborhood, close to the downtown area. The project sponsor does not control this proposed alternative site property.

8. EIR AUTHORS AND PERSONS CONSULTED

8.1 EIR AUTHORS

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Rick Baker, Alameda County Flood Control District
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Bill McGowan, EBMUD Facilities Planning
Dan Kimm, EBMUD Wastewater Treatment
Mike Crosotti, Oakland Scavenger Company
Nancy Elbing, Customer Representative, PG&E
George Gray, Operations Chief, Oakland Fire Department

APPENDIX A

INITIAL STUDY

File No. ER 87-11
Ref. No. CMD87-45

City of Oakland
Oakland, California

INITIAL STUDY
California Environmental Quality Act

I. DESCRIPTION OF THE PROJECT Eighteen story building containing 238 residential condominium units; 264 parking spaces provided in ground floor and two below grade parking levels; swimming pool and recreational facilities on second floor.

II. DESCRIPTION OF THE ENVIRONMENTAL SETTING Site containing existing three-story apartment building containing 40-47 units, surrounding uses are all high density residential; Jackson Street is a two-way Street, one lane in each direction.

III. ENVIRONMENTAL EFFECTS

	Yes	Maybe	No	Source or Explanation
Geophysical. Will the proposal result in:				
1. Unstable earth conditions, including erosion or slides, or changes in geologic substructures either on or off the site?		X		See Attachment
2. Major changes in topography or ground surface relief features?	X			" "
3. Construction on loose fill or other unstable land which might be subject to slides or liquefaction during an earthquake?		X		" "
4. Construction within one quarter mile of an earthquake fault?			X	
5. Substantial depletion of a nonrenewable natural resource or inhibition of its extraction?			X	
Air and Water. Will the project result in:				
6. Substantial air emissions, deterioration of ambient air quality or the creation of objectionable odors?		X		See Attachment
7. Substantial degradation of water quality?			X	
8. Changed drainage patterns or increased rates or quantities of surface water runoff?			X	
9. Interception of an aquifier by cuts or excavations?			X	
Biotic. Will the project:				
10. Reduce the quantity of fish and wildlife in the project vicinity, interfere with migratory or other natural movement patterns, degrade existing habitats or require extensive vegetation removal?			X	
11. Reduce the numbers of any rare or endangered species of plants or animals?			X	
Land Use and Socio-Economic Factors. Will the project:				
12. Conflict with approved plans for the area or the Oakland Comprehensive Plan?			X	
13. Carry the risk of an explosion or the release of hazardous substances, including oil, pesticides, chemicals or radiation?			X	
14. Require relocation of residents and/or businesses?	X			See Attachment
15. Cause a substantial alteration in neighborhood land use, density or character?	X			
16. Generate substantially increased vehicular movement or burden existing streets or parking facilities?		X		See Attachment
17. Elicit substantial public controversy or opposition?		X		See Attachment
18. Have a substantial impact on existing transportation systems or circulation patterns?		X		" "
19. Result in a substantial increase of the ambient noise levels for adjoining areas?		X		" "
20. Impose a burden on public services or facilities including fire, solid waste disposal, police, schools or parks?		X		" "
21. Impose a burden on existing utilities including electricity, gas, water, and sewers?		X		" "
22. Destroy, deface or alter a structure, object, natural feature or site of historic, architectural, archeological or aesthetic significance?			X	
23. Involve an increase of 100 or more feet in the height of any structure over any previously existing adjacent structure?			X	

Energy: Will the project:	Yes	Maybe	No	Source or Explanation
24. Use or encourage use of substantial quantities of fuel or energy?	X			

IV. MANDATORY FINDINGS OR SIGNIFICANCE (EIR required if answer to any of the following questions is "yes" or "maybe".)

	Yes	Maybe	No
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		X	
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)		X	
c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)	X		
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X

If any "yes" or "maybe" answers are marked, describe the specific nature of the environmental effects involved and their relationship to the project. (Use an attached sheet if necessary.) ______

SEE ATTACHMENT

V. DETERMINATION:

On the basis of this initial evaluation:

☐ I find the proposed project WILL NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.

☒ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Name ______ Date ______

Title Associate Planner

ATTACHMENT

ITEMS MARKED "YES"

2. The site will be excavated for two underground parking levels.

14. Residents of the existing apartment building will be displaced by this project.

15. This project would be by far the largest residential complex in this area.

24. The project will generate significant energy consumption.

ITEMS MARKED "MAYBE"

1. & 3. The project site may be underlain by fill. Other projects near Lake Merritt have encountered ground water.

6. - Traffic generated by the project may reduce air quality in the area.

16.& 18. Jackson Street is a narrow two way street, one lane in each direction. Traffic circulation in this area is a problem during the p.m. peak hours. This project would worsen this situation.

17. The Adams Point Preservation Association and the Chinatown/Central Community Development Board have opposed other large projects near Lake Merritt.

19. Increased traffic due to this project could add to ambient noise in the area.

20.& 21. It is unknown at this time if the capacity of the sewers in the area can accommodate this project.

APPENDIX B

TRAFFIC AND CIRCULATION

LEVEL-OF-SERVICE INTERPRETATION

Level-Of-Service	Description	Average Vehicle Delay (Seconds)	Volume to Capacity Ratio
A	**Free Flow.** No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Insignificant delays.	5	0.0-0.59
B	**Stable Operation.** An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. Minimal delays.	5-15	0.60-0.69
C	**Stable Operation.** Major approach phase may become fully utilized. Most drivers feel somewhat restricted. Acceptable delays.	15-25	0.70.-0.79
D	**Approaching Unstable.** Drivers may have to wait through more than one red signal indication. Queues develop but dissipate rapidly, without excessive delays.	25-40	0.80-0.89
E	**Unstable Operation.** Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. Significant delays.	40-60	0.90-0.99
F	**Forced Flow.** Represents jammed conditions. Intersection operates below capacity with low volumes. Queues may block upstream intersections. Excessive delays.	60	1.00 and above

Source: "Highway Capacity Manual", Highway Research Board, Special Report No. 87, Washington, D.C., 1965.

"Highway Capacity Manual", Transportation Research Board, Special Report No. 209, Washington, D.C., 1985.

THOMSON ENGINEERS
TRANSPORTATION ENGINEERING

CITY OF OAKLAND

Resident Parking Survey

Date:________________________ Time of Survey:_________________
Interviewer:__________________________

1. Do you live in this area? Yes____ No____

   If no, how did you get here? Car____ Transit____ Other __
   If yes, continue.

2. How many cars are there in your household? ____

3. Do you have a 1, 2 or 3 bedroom apartment? ____

4. Where do you park?

   On street____ Apartment Garage____ Other_______________

5. How do you go to work?

   Drive car/van/truck ____

   Passenger in car/van/truck ____

   BART ____

   Bus ____

   Walk ____

   Other ____

6. What time to you leave to go to work during the week, and what time do you arrive home?

LEAVE		ARRIVE	
Before 6:45 a.m.	____	Before 3:45 p.m.	____
6:45-7:15 a.m.	____	3:45-4:15 p.m.	____
7:15-7:45 a.m.	____	4:15-5:00 p.m.	____
7:45-8:15 a.m.	____	5:00-5:30 p.m.	____
8:15-8:45 a.m.	____	5:30-6:00 p.m.	____
8:45-9:15 a.m.	____	6:00-6:30 p.m.	____
After 9:15 a.m.	____	After 6:30 p.m.	____

7. Do you think parking space is adequate for this area?

   Great______ OK______ Poor______

8. How often do you get visitors that need to park in the area?

   Once a day _____ Twice a day____ Three times a day_____

Traffic Survey Summary

Table A - 1: 1540 Lakeside Residential Project

		Total Number Surveyed
1. Do you live in this area?	Yes	190
	No	57
		247

2. How many cars in your household?

	No Car	1 Car	2 Cars	3 Cars	Total
One bedroom Apt.	35 (26.5%)	89 (67.4%)	6 (4.6%)	2 (1.5%)	132 (100%)
	Car ownership/1 bedroom apt = 0.81 cars				
Two bedroom Apt.	6 (16.7%)	16 (44.4%)	12 (33.3%)	2 (5.6%)	36 (100%)
	Car ownership/2 bedroom apt. = 1.28 cars				
Three bedroom Apt.	1 (9%)	5 (~~5%~~) 46%	4 (~~4%~~) 36%	1 (9.1%)	11 (100%)
	Car ownership/3 bedroom apt. = 1.46 cars				
Studio	2 (28.5%)	5 (71.5%)	--	--	7 (100%)
	Car ownership/studio = 0.71 cars				

3. Where do you park?

	Number Surveyed	
On-street	64	(45%)
Off-street	78	(55%)

4. How do you go to work:

Drive car/van/truck	62	(41.9%)
Passenger car/van/truck	20	(13.5%)
BART	17	(11.5%)
Bus	26	(17.6%)
Walk	20	(13.5%)
Other	3	(2%)
	148	(100%)

5. What time do you leave to go to work during the week, and what time do you arrive home?

LEAVE		ARRIVE	
Before 6:45 a.m.	13.4%	Before 3:45 p.m.	11.2%
6:45-7:15 a.m.	8.4%	3:45-4:15 p.m.	3.7%
7:15-7:45 a.m.	14.5%	4:15-5:00 p.m.	18 %
7:45-8:15 a.m.	16.9%	5:00-5:30 p.m.	17 %
8:15-8:45 a.m.	14.5%	5:30-6:00 p.m.	19.5%
8:45-9:15 a.m.	13.3%	6:00-6:30 p.m.	14.6%
After 9:15 a.m.	19 %	After 6:30 p.m.	16 %
	100 %		100 %

6. Do you think parking space is adequate for this area?

Great: 2% OK: 15% Poor: 83%

7. How often do you get visitors that need to park in the area?

Once a day: 83% Twice a day: 8% Three times a day: 9%

APPENDIX C
HOUSING DATA

TABLE C-1

OAKLAND HOUSEHOLD SIZE CHARACTERISTICS
1970-2000

Year	Average Household Size	Six + Person Households No.	Six + Person Households % of Total HHs
1970	2.53	9,409	6.8%
1980	2.33	6,502	4.6
1985	2.38	N.A.	--
2000	2.21	N.A.	--

Sources: U.S. Bureau of the Census, 1970 and 1980.
State of California DOF, 1985.
Association of Bay Area Governments (ABAG), Projections '85, for projection of year 2000 household size.

TABLE C-2

NUMBER OF ONE PERSON HOUSEHOLDS IN OAKLAND
1970-1980

Year	One-Person Households	Total Households	One-Person as % of Total
1970	44,031	138,831	31.7%
1980	51,802	141,657	36.7
Change			
No.	7,771	2,826	--
%	17.6	2.0	--

Sources: U.S. Bureau of the Census, 1970 and 1980.
Supplemental calculations by EIP Associates.

TABLE C-3

UNITS IN STRUCTURE, OAKLAND
IN PERCENT, 1960-1988

Units in Structure	1960	1970	1980	1985	1988
% One Unit	56.5	49.1	49.4	49.0	48.8
% 2 or More	43.4	50.7	50.5	50.9	51.1
% Mobile Homes	0.1	0.1	0.1	0.1	0.1
Total Units	141,479	146,608	150,229	153,150	154,571

Sources: U.S. Bureau of the Census, 1960, 1970 and 1980.
State of California DOF, 1985, 1988.

TABLE C-4

UNITS IN STRUCTURE, OAKLAND
1960-1988

					Change, 1960-1988	
Units in Structure	1960	1980	1985	1988	No.	%
One	79,974	74,186	74,966	75,453	-4,521	-5.7%
Two or More	61,391	75,855	77,996	78,932	17,541	28.6%
Mobile Homes	114	188	188	186	72	63.2

Sources: U.S. Bureau of the Census, 1960 and 1980.
State of California DOF, 1985, 1988.

TABLE C-5

HOUSING UNITS BY YEAR STRUCTURE BUILT,
OAKLAND AND ELSEWHERE, IN ALAMEDA COUNTY,
IN PERCENT, 1980

Year Structure Built	Oakland	Elsewhere in Alameda County
1975 and After	2.7	9.3
1970 to 1974	5.2	13.4
1960 to 1969	15.6	25.0
1940 to 1959	35.7	33.0
1939 or Before	40.9	19.3
Total Units	141,657	302,777

Sources: U.S. Bureau of the Census, 1980.
Supplemental calculations by EIP Associates.